Resilience and the switch to distance learning: How the secondary school girls experienced the use of information technology during the COVID-19 pandemic

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Abstract

In recent years, upper secondary education in Finland has undergone a plethora of changes that have increased the use of ICT in upper secondary education. Despite the general assumption that young people are digitally skilled, there is also a known digital divide, which at worst, will create a digital inequality. The coronavirus pandemic required a rapid response by global governments. As such, secondary education was shifted from traditional classrooms to virtual settings, which increased the use of ICT even more. Moreover, resilience has a well-established positive association with academic performance, and especially when facing adversities and overcoming them. Therefore, exploring the students' experiences during the coronavirus pandemic through the lens of resilience was chosen.

The research questions were as follows: How is ICT used in upper secondary school during distance education? How did teenage girls studying in upper secondary school experience distance learning during the COVID-19 pandemic? What kind of coping strategies did the teenage girls use to overcome the challenges faced when using ICT? What kind of factors of resilience are coming up when discussing the adversities related to the use of ICT in school?

This thesis used qualitative research methods. Semi-structured theme interviews were conducted to determine answers to the research questions. Coping strategies related to ICT-related challenges were categorised using Brief COPE by Carver (1997), whereas factors of resilience were analysed using the READ Scale (von Soest, Mossige, Stefansen & Hjemdal, 2010). The findings were further analysed using nexus analysis by Scollon & Scollon (2004).

Based on the qualitative analysis, the teenagers adapted well to distance learning. However, they were affected by their historical bodies. Reported challenges during distance education were related to teaching, communication, technology, environment, wellbeing, and examinations. In addition, all the students interviewed were analysed to possess many factors of resilience, although at different levels. For example, variation in personal competence, social resources, and family coherence came up. Regarding coping, the students were analysed to employ different coping strategies in similar situations. Moreover, distance education had an impact on which coping strategy to use. The most common coping strategy discussed were problem-focused coping. The use of coping was affected by, for example, access to social resources.

Keywords
Information and communication technology, distance education, digitalisation, upper secondary school, COVID-19, girls, resilience, coping

Supervisor
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Foreword

I would like to give very special thanks to my thesis supervisor Marianne Kinnula for giving valuable feedback and inspiring ideas during this thesis process. I would also like to thank my sister Saaga, who sparked the idea for this thesis and helped me to find interviewees.

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Contents

1. Introduction

In the spring of 2020, the COVID-19 pandemic brought the world to a halt. Its effects on the people, especially those who were deemed more vulnerable, were analysed in the media. Surveys conducted on young people revealed feelings of uncertainty and lack of control (Pavarini, Lyreskog, Manku, Musesengwa & Singh, 2020). To prevent the spread of coronavirus, key functions in society, including compulsory education, were moved from traditional to virtual settings. For schools, this meant switching from classrooms to distance learning. (Bergdahl & Nouri, 2020.)

Before the pandemic, Information and Communication Technology (ICT) had been increasingly integrated into society, a shift that had affected education in a variety of ways. For example, when countries included ICT in their curricula (Siddiq, Hatlevik, Olsen, Throndsen & Scherer, 2016). The huge leap to digitalisation during the last few years, coupled with coronavirus restrictions has accelerated the need to switch to digital tools even more. Finland is no exception to developing ICT use in classrooms. In 2017, an extensive project to reform the upper secondary school education was launched in Finland. This included reforming the General Upper Secondary Schools Act as well as the functional side of education, which emphasises the required skills needed to cope in an increasingly complex world (Finnish National Agency for Education, 2019).

ICT skills are essential for services such as social interaction, civic participation, information retrieval and processing, academic performance, and professional success (Kaarakainen, Kivinen & Kaarakainen, 2017). According to the new curriculum in Finland, digitalisation is creating possibilities for collaborative learning, knowledge creation and utilising various learning and information environments. For example, in mathematics, students are expected to develop and use software and digital information sources in learning, research, and problem solving. They are also expected to learn and evaluate the usefulness of ICT tools as well as their limitations. The aim of several courses is to learn how to use software to complete tasks in relation to course content. (Finnish National Agency for Education, 2019.) According to Bergdahl & Nouri (2020), while there has been a digital agenda in most schools, the strategies needed during COVID-19 were different when assessed by the teachers.

There have been indications that using digital technology at school can favour high-performing students, and disadvantage low-performing students. This inequality increases further when access to the internet, devices and other forms of technology are limited. (Bergdahl, Nouri, Fors & Knutsson, 2020.) Additionally, there is a huge variation in their skill sets and capabilities of young people, even though technology is embedded into all aspects of everyday life. The access, or the lack of access, to digital technologies to develop ICT skills can create a digital divide or polarisation in society. Providing young people with equal access to digital technology is essential, as limited access can lead to digital exclusion and prevent people from fully participating in society. (Kinnula & Iivari, 2019.)

In the city of Oulu, Finland, where most of the interviews were conducted, a report about digitalisation in basic education was prepared in order to find out about the current state of ICT use. According to the report, the city, and the schools prepared competence levels

for ICT skills. However, these competence levels are applied in a myriad of ways and a rarely realised (City of Oulu, Educational and Cultural Services, 2018.) Therefore, children studying in different primary schools might have a varied skillset when starting upper secondary school, which puts them in unequal positions from the outset. According to Kaarakainen et al., (2017), ICT skills should be necessary educational outcomes that are provided to every student and achieving this requires a valid assessment of said skills. If the evaluation criteria of ICT skills are not uniform in one city, how is the case nationally, or worldwide? When the assessed ICT competence levels are not uniform among schools, and the varied skillsets between young people is already proven as well as the digital technology's disadvantage towards low-performing students, could the current trend towards digitalisation in school settings widen inequality in education and digital skills?

Reports in the media have argued that children perform differently when they are learning virtually. Factors such as socio-economic background and resilience might also influence a child's performance in schools and assessments. In the best scenarios children might feel motivated and focus better when studying at home especially if they are getting help from their parents. However, in worst case scenarios, children might become frustrated, have learning difficulties and drop off. Differences in family backgrounds have both positive and negative effects for performance when children are in distance teaching. (Eskonen, de Fresnes, Pietarinen, 2020.) Moreover, school burnout and resilience have strong negative correlations in high school students. Students who experienced high levels of burnout also felt less resilient and experiencing school burnout was lowered by positive emotional perceptions. Being able to rely on personal resources, such as resilience, can put children in a better position to overcome adversities that can compromise their academic career. (Fiorilli, Farina, Buonomo, Costa, Romano, Larcan & Petrides, 2020.)

In Nordic countries, young people have been involved and interested in engaging with digital technology and the internet. For example, the emergence of social media, has incentivised girls to use technology actively. Even though girls are not less competent digitally than boys in Nordic countries, boys tend to outperform girls in the most technical tasks. Women have been found to have weaker technical skills and lower technical self-efficacy compared to men. (Kaarakainen, 2019.) In this study, the gender perspective is taken into account in order to understand the girls' experiences using technology in upper secondary school, since there are some indications that the experiences and skill levels might differ between the genders.

This thesis aims to find out how teenage girls studying in upper secondary school in Finland were affected by the coronavirus restrictions. In particular, it will focus on the switch to distance learning and the use of ICT. The COVID-19 pandemic changed students' daily life, and we observed how teenage girls responded to this radical shift in terms of resilience. In addition, this study observes what kind of coping techniques were used to overcome possible challenges.

The reason for the context is as follows. Firstly, upper secondary education has been affected by digitalisation heavily during the last years. However, according to previous research, there is a lack of measurement tools for assessing ICT literacy (Siddiq et al., 2016), although the skill sets and capabilities among young people are varying (Kinnula

& Iivari, 2019). Secondly, while the COVID-19 pandemic forced the schools to switch to distance learning, the teaching in upper secondary schools found new, digital forms to replace the traditional face-to-face teaching. Third, there have been indications of gender differences in experienced ICT skills, nonetheless, digitalisation affects all genders. Moreover, at the time of writing, Policymakers around the world are discussing whether the schools should be kept open. In order to be prepared for distance learning again, it is important to understand the pitfalls and disadvantages of the current pandemic concerning the arrangement of secondary education, so those can be avoided in the future. All the material collected during the interviews is analysed within the time and space context of the actions by using nexus analysis by Scollon & Scollon (2004).

The inspiration for this study arose as a result of personal experiences in real-life contexts, when the author observed an upper secondary school student using ICT in distance mathematics lessons. This observation raised questions that related to the use of ICT. For example, what if not everyone has someone at home who can support the use of it? How does distance learning affect the student's motivation, academic performance, and perception of themselves?

The research questions are as follows:

- RQ1: How is ICT used in upper secondary school during distance education?
- RQ2: How did teenage girls studying in upper secondary school experience distance learning during the COVID-19 pandemic?
- RQ3: What kind of coping strategies did the teenage girls use to overcome the challenges faced when using ICT?
- RQ4: What kind of factors of resilience are coming up when discussing the adversities related to the use of ICT in school?

This thesis consists of seven chapters. In this chapter, the research problem is introduced. The next two chapters focus on presenting the existing research on the topic. Chapter 4 will outline the research methods used, after which the results of the study are presented and analysed using nexus analysis (Scollon & Scollon, 2004). Finally, the last two chapters will summarise and analyse further the outcomes of this study and propose future research.

2. Digitalisation of upper secondary education

Even though ICT has been integrated into our society increasingly also before pandemic (Siddig et al., 2016), and digitalisation is considered important in national curricula (e.g., Finnish National Agency for Education, 2019) the COVID-19 pandemic forced governments to shift from traditional educational settings to distance learning at speed. (Berghdahl & Nouri, 2020). Distance learning is taught using ICT, which requires ICT skills. The skills among the young people are varied (Kinnula & Iivari, 2019), which can cause a digital divide, especially in situations where the change from traditional teaching to distance learning happened suddenly.

In the next subsections, the main themes related to this thesis will be explained through previous research. It will cover digitalisation upper secondary education and its related subtopics which include distance learning, digital divide, and ICT literacy.

2.1. Digitalisation in secondary education

Digitalisation is changing the daily habits of studying, working, communicating, and living. ICT is shaping daily life and therefore demands certain kinds of literacies and digital competencies from individuals to be able to operate and participate in society. (Kaarakainen et al., 2017.) Because of technological advancements and increased availability of ICT, learning environments and curricular reforms have been necessary (Siddiq & Scherer, 2019). All around the world, educational systems have reformed their national curricula to include the skills that are needed in order to solve problems in technology-rich environments while becoming reflective and responsive ICT users (Siddiq & Scherer, 2019) and Finland is not an exception.

The new General Upper Secondary Schools Act has been applied in Finland since 2019. It outlines issues such as teaching, learning support, guidance and co-operation that are part of local curriculum. It will come into force in autumn 2021. The word digitalisation is mentioned often in the new curriculum, and it is embedded in the learning goals of several subjects, so that the students will be able to complete different tasks in digital environments. One goal of the new curriculum is to obtain basic knowledge and skills to help control the change in the world that is digitalising and increasingly complex. The general national objectives are mentioning the skills to be able to use and apply information technology. (Finnish National Agency for Education, 2019.)

Even though ICT has been increasingly applied at school, according to Olofsson, Linberg & Fransson (2017), some teachers have doubts towards its potential in teaching and learning activities. There were concerns regarding the use of ICT in schools before the COVID-19 pandemic as well, such as students using ICT for non-academic purposes, or having access to their own ICT devices at school (Olofsson et al., 2017). In turn, some of the students were discussed to be able to concentrate more, and therefore engage in studying (Bergdahl & Nouri 2020).

The use of technology in upper secondary school has been studied from a variety of such as using it to complement traditional teaching. For example, technology has been used in foreign language learning via the use of mobile technology (Vuorio, Okkonen & Viteli,

2018). They conducted a study focused on the user experience and usability and found out that the application was not suitable for all the users. The characteristics of the application which some of the users found positive, were negative for the others. (Vuorio et al., 2018.) Juvonen, Tanner, Olin-Scheller, Tainio & Slotte (2019) studied the role of digitally rich classrooms in the process of text-planning. Digitally rich classrooms provided additional resources for students such as laptops and smartphones. Smartphones were mainly used for initiating conversations with other students when they needed help from their peers or during group discussions. In turn, smartphones could be understood as distractive element by teachers. The results of their study raised questions and challenged the common claims of digital devices being a solution to pedagogical challenges as weak as something that disrupt the work. (Juvonen et al., 2019.)

Olofsson et al., (2017) conducted a study about how students view ICT. Students described the teachers expecting them to bring laptops to the lessons, even though sometimes they were not even used. ICT was mentioned being used mostly for storage and enabled research for source material for classroom exercises. Digital technologies supported oral presentations and helped structured note taking and text processing. Text processing made written assignments to be completed in less time and improved the quality in comparison to the traditional pen and paper. In addition, peer support and information sharing were mentioned. Even though smartphones are often considered a distraction, the students found them to be tools for scheduling, functioning as calculators and providing peer support for school and non-school related issues. ICT was also seen as a way of not falling behind at schoolwork, if not being able to attend school. (Olofsson et al., 2017.)

2.2. Distance learning in secondary education

Research about distance education has been ongoing for decades. It requires a different approach and skill set compared to traditional face-to-face teaching. There are multiple variations for the term distance education, such as distance learning, open learning, or online learning. It is a form of education where physically distant learners and facilitators of the learning activity are brought together. It is a planned and structured learning experience that is carried out using media channels allowing the participants to interact and access educational resources. (Niemi & Kousa, 2020)

Even though the COVID-19 crisis has led to distance learning becoming common use, there have been discussions of not classifying that to be traditional distance education. Key differences between the two include limited planning, technological aspects including accessibility, security, and copyright, as well as learning outcomes. (Bergdahl et al., 2020.) Bergdahl et al., (2020) identify the transition as crises-prompted temporary distance education since it is not traditional distance education, but rather crisis-response. Distance learning, distance teaching and distance education are used in this thesis interchangeably, all pointing to the description given above.

Brändström, Wiklund & Lundström (2012) conducted a study where upper secondary school students were receiving music education via distance learning tools, such as laptops, Skype, and online teaching as well as more advanced equipment. The study concluded that the participants were happy with the distance education, but generally preferred face-to-face teaching as they considered it to be nicer. Challenges associated

with distance education include it being more intensive and resulting in time delays. Those classes with more communication between the participants were considered more successful than those that had teacher-led lecturing. (Brändström et al., 2012.)

Niemi & Kousa (2020) studied the upper secondary school students and teachers' perceptions during distant teaching caused by COVID-19. According to a survey conducted on the students, the distance teaching had been carried out successfully. However, downsides included decreased motivation, problems in learning management and a heavy workload, which additionally decreased motivation. Moreover, earlier studies have found that even high-performing students find distance teaching difficult, isolating, and discouraging, and that it requires increased self-management skills from the students. Technological problems have an impact on motivation, and the students felt like they were not getting as much help as they would have needed. The lack of social contact was mentioned as a negative aspect as well. (Niemi & Kousa, 2020.)

Bergdahl & Nouri (2020) conducted research about switching to distance teaching driven by the COVID-19 pandemic by focusing on the teachers' perspectives. They stated that even though there has been a digital agenda in most schools, the strategies needed during the COVID-19 pandemic were different. Teachers mentioned having technological issues limiting their practice, and a lot of effort invested into developing pragmatic solutions for pedagogical activities. Teachers emphasised activities such as communication, collaboration, sharing learning materials and uploading of student work, assessment, and examination in order to support the students. They had problems with limited previous experience of using digital tools. Teachers also mentioned how some of the students started to disengage with distance teaching, even when they had functioned well in traditional classrooms. (Bergdahl & Nouri, 2020.)

2.3. ICT literacy

The use of ICT and skills required for it have been defined by using multiple terms such as ICT, IT, or computer literacy. Often, there is mentioned the domain part, e.g., computer, ICT, Internet, and knowledge perspective, such as competence, literacy or skill (Kaarakainen et al., 2017). Terms such as ICT literacy, digital competence and digital skills are terms used interchangeably, but they all describe the skills needed to solve problems in a technology-rich environment, while being reflective and responsible ICT users. Those skills are needed in order to succeed professionally and academically. In addition, civic participation and social interaction require ICT skills. ICT literacy includes the interest, attitude, and ability of individuals to use digital technology and communication tools properly. It encapsulates accessing, managing, integrating, and evaluating information, while being able to construct new knowledge and communicate with others, and participating in society. (Siddiq & Scherer, 2019.) Another term mentioned is 21st century skill, which includes more competencies than ICT literacy. (Siddiq et al., 2016). In this study, we use mostly the term ICT skills to describe those aforementioned skills.

In order to be successful in today’s society digital skills are essential. But by accessing the digital world, adolescents' risk being exposed to issues such as cyberbullying, pornography, on-screen violence, sexting and contact with strangers, which might have psychological consequences such as anxiety, depression, as well as feelings of anger and

frustration. Adolescents who were more digitally skilled took more online opportunities, which led to more online risks. Parental mediation affected the digital skills, so that restrictive mediation had a negative impact on the adolescents' digital skills, leading to lower risk exposure and less online opportunities. (Rodríguez-de-Dios, van Oosten & Igartua, 2018.)

The term ICT literacy has changed over time as technologies have advanced and changed (Siddiq et al., 2016). Frameworks and scales have outlined the practical skills and knowledge that ICT literacy includes. Several of these frameworks include similar factors with small adjustments (Table 1). van Laar, van Deursen, van Dijk & de Haan (2017) conducted a literature review to provide a framework for the digital skills needed in the 21st century. The seven core skills identified by the study were technical, information management, communication, collaboration, creativity, critical thinking, and problem solving. In addition, conceptual skills were also identified and included ethical awareness, cultural awareness, flexibility, self-direction, and life-long learning. (van Laar et al., 2017.)

Table 1. Comparison of scales related to ICT literacy.

Literature review on digital literacy (van Laar et al., 2017)	**Digital Literacy Scale (Rodríguez-de-Dios et al., 2018)**	**DIGCOMP framework (Siddiq et al., 2016)**
Technical skills	Technological and instrumental skills	
Information management skills	Information skills	Information skills
Communication skills	Communication skills	Communication skills
Collaboration skills		
	Personal security skills	Safety
	Device security skills	
Creativity		Content-creation
Critical thinking	Critical skills	
Problem solving		Problem solving

Another scale developed to understand ICT competency is the Digital Literacy Scale, which includes six skills. Those are technological and instrumental skills, communication skills, information skills, critical skills, personal security skills and devices security skills. (Rodríguez-de-Dios et al., 2018.) Moreover, DIGCOMP, which is a framework developed for developing and understanding digital competency in Europe, digital competence, or in this case ICT skills, consists of confident, critical and creative use of ICT in order to achieve goals related to different aspects of life and society, such as work, employability, learning, leisure, inclusion and/or participation in society (Siddiq et al., 2016.) Its categories are divided into five main components, which have multiple subcategories. Those are searching, browsing, filtering, evaluating, storing and retrieving information. (information); interacting through technologies, sharing content and information, engaging to online citizenship, collaborating through digital channels, and managing digital identity (communication); developing content, interacting and re-elaborating, programming, copyright and licenses (content-creation); Protecting devices, personal data, health, and the environment (safety); and solving technical problems,

identifying needs and technological responses, innovating and creatively using technology, and identifying digital competence gaps (problem solving) (Siddiq et al., 2016.)

2.4. Digital divide and gender differences

In digital societies, ICT skills should be seen as a necessary educational outcome provided to every student. In order to achieve this, a valid assessment of the skills is required. (Kaarakainen et al., 2017.) Digital divide exists among digital natives (Weber & Becker, 2019), and the skills and capabilities of young people varied related to meaningful use of digital technologies (Kinnula & Iivari, 2019). Because of internet access being standard for most Western populations, research about digital divide has focused on the determinants of internet skills, uses and outcomes (Scheerder, Deursen & van Dijk, 2017). However, in addition to access or use of digital technology, digital divide includes skills to integrate digital technology into meaningful social practices (Iivari, Sharma & Ventä-Olkkonen, 2020). By lacking those skills, individuals might not be able to fully participate in society and realise their full potential (Kinnula & Iivari, 2019).

The city of Oulu in Finland, where most of the interviews of this thesis will be held, prepared a report that focused on the state of digitalisation in basic education. The report states that most of the schools (61%), are utilising the ICT competence levels prepared by either the city or the school. Nevertheless, the existing levels, the schools are applying those in varying ways, not everyone is following them, and the realisation of the levels is not followed. The situation is recognised by the headmasters of the schools, and the report highlights that the schools would benefit from following the ICT competence levels. By following those, the schools could be sure that all the pupils are equally able to receive the similar education and reach the same level in digital skills, but this is not the case currently. (City of Oulu, Educational and Cultural Services, 2018.)

Some studies have been conducted in order to operationalise the determinants of digital divide. Scheerder et al., (2017) conducted a systematic literature review to fill the knowledge gap of inconsistent terminology and lack of theoretical ground related to digital divide. Seven determinants of digital divide were identified, which were sociodemographic (e.g., age, gender), economic (e.g., household income), social (e.g., social networking, political participation), cultural (e.g., cultural capital), personal (e.g., leisure, health related activities), material (e.g., home internet access, number of devices) and motivational (e.g., online skills, internet attitude). (Scheerder et al., 2017.)

Digital literacy has been thought to have significant differences between different demographic and socio-economic groups (Pagani, Argentin, Gui, Stanca, 2016). Socioeconomic factors affect the access to computers so that adolescents are using more computers if they are from high socio-economic families. This is not only because of the economic resources, but also from a certain kind of cultural environment. (Koivusilta, Lintonen & Rimpela, 2007.) In addition, social backgrounds affect the use of the internet in such a way that it is used more frequently for informational purposes by adolescents from higher social backgrounds, while entertainment activities on lower (Weber & Becker, 2019). Moreover, the difference in ICT skills between individuals outweighed the gender differences in a study conducted by Kaarakainen et al., (2017).

In Finland, there are a total of 105,200 students attending upper secondary school education, of which 58% are women (Statistics Finland, 2020). According to a report by the Finnish National Agency for Education (2019) concerning upper secondary school

education in Finland, about half of the students choosing an advanced syllabus in mathematics were women. It has been indicated that the skill levels of women were lower compared to the men within the context of the general upper secondary education. In addition, the women often had a more negative attitude towards their mathematical skills compared to men. Furthermore, attitudes towards natural sciences do not have gender differences, but self-efficacy is lower among girls compared to boys. (Finnish National Agency for Education, 2019.)

On average only 17% of the workers in the ICT industry in Europe are women (Hyrynsalmi & Hyrynsalmi, 2019). Gender roles have a huge impact on technological self-efficacy, and masculinity is a strong predictor of higher self-efficacy (Kaarakainen et al., 2017). According to Siddiq & Scherer (2019), male students have more positive attitudes towards technology, they use it more actively, their self-efficacy is believed to be higher, and they perform better compared to their female peers. The difference between the self-efficacy and attitude between boys and girls is small but significant, at least in self-report measures. There have also been performance-based assessments related to ICT literacy, but those often have inconsistent results. (Siddiq & Scherer, 2019.)

There are also gender differences when comparing the ICT usage (Table 2). Based on the information given by the school health surveys, girls use less computers and mobile technology compared to boys, and they experience more problems with the equipment in upper secondary school (National Institute for Health and Welfare, 2019). Kaarakainen et al., (2017) studied the gender differences in ICT skills in Finnish students. Their results indicated that there were small but significant differences between the genders ICT skills, and they explained how the differences were item specific. Girls outperformed boys when using learning-related software and tools, communication, social networking, and security issues, whereas boys outperformed girls on the items requiring more technical knowledge. (Kaarakainen et al., 2017.)

Table 2. Use of technology among Finnish upper secondary school students.

	Girls	**Boys**
Problems with the equipment used in studies	14,9%	7,5%
Programming monthly	1,7%	9,1%
Play video games monthly	46,0%	83,5%
Play video games daily	16,5%	48,1%
Making animations, videos, movies monthly	3,9%	8,6%
Publishing media contents monthly	7,0%	7,7%

Bergdahl et al., (2020) studied engaging and disengaging students in technology-enhanced teaching. Not only does access to the internet and devices create inequality between the students, but they also found out that for low and average performing students, the use of technology might be problematic. In addition to being a potential tool in learning, technology can also be a distraction that makes it easier to escape boring lessons. Students who performed below average in the school were found to need more support to focus on their learning. For high-performing students the digital technology was not that problematic. They were able to resist urges and avoid the distractions provided by technology, and they reported using less time using digital technology for non-school related actions compared to low- or average performing students. (Bergdahl et al., 2020.)

Moreover, sometimes the benefits from digital literacy are directly related to the subject. Students who performed low in reading benefited more from digital literacy, whereas in mathematics, the student performance and digital literacy had a U-shape relationship. Informational digital skills have been proven to have a positive, significant effect on academic performance, as there is an increase in digital literacy scores as well as mathematics and reading tests (Pagani et al., 2016). When considering the individual experiences and leisure time, usage habits and digital preparedness, and combining them with the non-uniform ICT skill education and assessment, the equality in the ICT skills between genders and individuals may be compromised (Kaarakainen et al., 2017).

3. Resilience and coping

The COVID-19 crisis led many countries closing schools and switching to distance education, which affecting a high number of students in pre-primary, primary and secondary levels (Bergdahl et al., 2020). The shift from traditional learning to distance learning happened suddenly, as a response to a crisis. Coping refers to actions taken in order to handle any type of stressors, whether small or large, and resilience means the result of those positive coping strategies, followed by serious adversities (Rice & Liu, 2016). Therefore, it is a natural choice to observe the students' experiences through the lens of resilience and coping.

Even though resilience and coping are often used interchangeably, Fletcher & Sarkar (2013) argue that they should be considered conceptually distinct. Whereas resilience influences the assessed event, coping includes the strategies that are used following stressful situation. Coping strategies can be also negative, such as substance abuse, or positive, such as self-dialogue, while resilience is always a positive response to a stressful situation. (Fletcher & Sarkar 2013.) In this thesis, these two are defined and analysed separately. Next, the previous research regarding coping is explored, after which the impacts of resilience are discussed further.

3.1. Coping

When an individual perceives a difficult or distressing situation and uses a behaviour or intrapsychic efforts to prevent or manage the situation, the efforts are defined as coping (Blomgren, Svahn, Åström, & Rönnlund, 2016). Coping is a purposeful response and ongoing dynamic process, which changes according to changing demands of a stressful encounter or event (Hartberg, Clench-Aas, Raanaas, Lundqvist, 2015). However, coping does not always lead to improved functioning (Rice & Liu, 2016). Not only addressing emotional situations or trauma, but coping can also deal with everyday situations effectively. Turner (2011) proposes that people are coping with technology in everyday use. (Turner, 2011.)

3.1.1. Coping strategies

Coping strategies are behavioural and cognitive responses from individuals in stressful situations (Steinhardt & Dolbier, 2008). By learning which coping technique to use in which stressor situation, the teenagers may be able to cope better. By growing older or being more frequently exposed to a specific stressor, they may become more effective copers. The coping techniques that can be employed while building resilience include learning to reinterpret a negative or stressful event to have positive meaning, using humour to boost positive emotions, or to engage in more optimistic thinking. (McHugh, Wisniewski, Rosson, Xu & Carroll, 2017.)

There are different models to conceptualise coping. For example, the strategies have been divided into primary-secondary, internal-external, voluntary-involuntary, and engagement-disengagement. External strategies are those focused outside of oneself, through communication which will help to identify and solve the problem. Internal strategies consist of ways to regulate the emotional distress by using internal efforts, such

as using substances, for reducing the negative emotions. Internal strategies, avoidance strategies and withdrawal have some similar strategies. (Hartberg et al., 2015.)

Moreover, a stress-coping model is divided into strategies and processes adopted by an individual in order to reduce stress into primary appraisal and secondary appraisal. Primary appraisal includes assessment of the threat posed by the stressor, while secondary appraisal comprises the controllability of the stressor as well as outer and inner resources used by an individual to handle the situation. Based on the effectiveness of solving a stressful situation or reducing negative outcomes, those strategies can be divided into mainly adaptive or maladaptive. (Blomgren et al., 2016.)

Other classifications also exist. For example, disengagement and engagement coping, where engaging is adaptive and disengagement less adaptive. Engagement means handling the stressful event or emotions directly by using strategies such as planning, whereas disengagement coping comprises the strategies used in order to block or avoid influences from the stressor such as using denial or substances. Problem-focused or engagement coping strategies are linked to positive adaptation, and therefore predicting socioemotional health, while disengagement coping has predicted poor adaptation and higher levels of depressive symptoms. (Blomgren et al., 2016.) Problem-focused coping refers to actions, where the coping aims to resolve the stressful situation between the self and the environment, whereas emotion-focused coping aims to control the negative emotions arising from the stress. (Hartberg et al., 2015.)

3.1.2. Adolescent coping

For current and future adjustment, being able to adaptively cope with stress is a significant issue for adolescent development (Blomgren et al., 2016). Lee, Seo, Lee, Park, Lee & Lee (2016), propose that by helping adolescents to learn to apply various coping mechanism, trauma could be prevented, and recovery improved. They suggest that it is needed to provide assistance for adolescents so that they would be able to apply both emotion-focused and problem-focused strategies. The encouragement could be reinforced by teachers, counsellors and the parents of the at-risk students (Lee et al., 2016).

The coping strategies are developing more refined and complex during adolescence, but there is individual variability among the teenagers. Coping style has been studied to be related for example to parental attachment and the teenager's ability to reflect and relate to the past, the present and the future. (Blomgren et al., 2016.) Moreover, the coping strategies used might be related to personality or school level. It is thought that personality can affect the coping strategies used, so that optimism, extraversion, conscientiousness, and openness predict engagement coping whereas neuroticism relates to disengagement coping. Factors such as age, severity of stressor and time between coping and report of coping all affect the relation between traits and coping. (Carver & Smith, 2010.) Additionally, neuroticism correlates negatively with task-centred coping, and positively with emotion-centred and avoidance-centred coping, whereas extraversion and conscientiousness have a positive correlation with emotion-centred and task-centred coping. (Bolli & Hof, 2018.)

Academic achievement has a big impact on future success during early adolescence. As such, demands and expectations are increasing in young people. Even though academic achievement has related to teenagers coping with academic demands, there is a misunderstanding of how they are socialised to cope with the academic demands. For

young people, parents are in a central position when it comes to socialising, helping, and supporting their children during stressful times. Parents' socialisation can directly impact how their child copes with an academic challenge, such as seeking help from a teacher, or planning to improve academic performance. (Tu, Cai, & Li, 2020.) Tu et al., (2020) suggest that adolescents' adaptive coping with academic challenges can be promoted by the parents. Moreover, there was a difference between the fathers' and mothers' socialisation of academic coping, as well as students' genders. (Tu et al., 2020.)

Research has indicated that there is no coping strategy that would be above all the others, but there have been suggestions that diverse coping strategies can protect the children's mental health in life-endangering situations (Lee et al., 2016). For children and adolescents with depressive or anxiety symptoms, there are notions that external strategies improve mental health, whereas internal strategies might be related to poor adaptation (Hartberg et al., 2015). Whereas problem-focused strategies have been studied to negatively correlate with children's emotional and behavioural problems, emotion-focused strategies have given mixed results. There have been some studies suggesting that by using emotion-focused strategies it makes a difference, whether to simultaneously adapt problem-focused strategies; if adapting those simultaneously, behaviour is adaptive, whereas if using only emotion-focused, behaviour is maladaptive. Emotion-focused strategies can help immediately after a crisis, but in the long run relying only on those might lead to poor mental health. (Lee et al., 2016.)

3.2. Resilience

Mental health problems are fairly common in children and adolescents. According to Dray, Bowman, Campbell, Freund, Wolfenden, Hodder & Wiggers (2017), between 10-20% of children and adolescents have mental health problems, most of them are between the ages of 12 and 24. The situation is similar for Finnish upper secondary school students; about 12% of boys and 22% of girls studying in upper secondary school have experienced depression for more than two weeks. Moreover, 21% of boys and 50% of girls have been worried about their mood during the last year. (National Institute for Health and Welfare, 2019.) The research in mental health has been changing towards resilience during the recent decades, by promoting positive outcomes (Dray et al., 2017). Resilience describes the process of restoring normality when there are psychological stressors in the environments of individuals, groups, or organisations (Semaan, 2019).

3.2.1. Factors of resilience

In psychological contexts, resilience describes an ability of humans to maintain normal levels of functioning while facing adversities (Fletcher & Sarkar, 2013). Instead of focusing on the risks, resilience research is today emphasising strengths and assets of the individual, where resilience is recognised as the presence of protective factors (Kelly, Fitzgerald & Dooley, 2017). Early days of resilience research focused on singular or personal attributes. However, the modern definition of resilience promotes the environment's impact instead of an individual's responsibility, and it consists of the individual's ability to navigate the psychological, social, cultural, and physical resources maintaining their well-being. Therefore, in the right environment, we all have the capacity to be resilient.

There have been various theories proposed by different researchers about resilience, and there are some commonalities across the approaches taken (Fletcher & Sarkar, 2013). Commonly resilience is referred to as the construct of a collection of multiple personal characteristics and strengths, and qualities of wider family, social and community environments, assets and resources which enable the ability to overcome disadvantages or adversities. (Dray et al., 2017.) Some of the researchers highlight personality and temperament factors as being fundamental to resilience, whereas others emphasise the importance of social support. (Fletcher & Sarkar, 2013.)

Personal factors, such as emotional support or economic resources, presence of additional stressors or ability to use emotional coping techniques, may determine a teenager's recovery from negative experiences. (McHugh et al., 2017.) There are several factors contributing to resilience, including individual positive factors, family, support networks outside family, and personality factors (Perez-Fuentes et al., 2020). Internal assets that can help teens to be more resilient can be, for example, an internal locus of control, high self-efficacy, coping (McHugh et al., 2017), self-esteem and self-belief. Other individual attributes relating to resilience and protective factors are sociability, intelligence, communication skills, positivity, empathy, and cooperation. (Kelly et al., 2017.)

Gender differences have been identified in prevalence of mental health problems as well as in the types of the protective factors that children and adolescents use. Therefore, there might be an indication that gender affects the results of resilience-focused interventions. (Dray et al., 2017.) For example, boys reported significantly higher levels of personal competence, whereas girls reported significantly higher levels of social competences in the READ scale research (Hjemdal, Friborg, Stiles, Martinussen, & Rosenvinge, 2006). READ scale was developed by Hjemdal et al., (2006) to measure resilience in early adolescents. It includes all three higher order categories generally accepted as protective factors of resilience, referred to as individual dispositional attributes, family support and cohesion, and external support systems.

3.2.2. Building resilience in adolescence

Poor mental health can result in lower academic achievements as well as increased rates of engagement in health risk behaviours such as self-harm, and suicide. The impact might follow on into adulthood, thus preventing mental health problems in childhood and adolescence will promote a better adulthood for young people. (Dray et al., 2017.) In stressful life events, resilient individuals can stabilise their emotions so that those events will not cause long-term harm. Directly after stressful situations, individuals may have a negative experience, despite the level of resilience. Therefore, resilience for a particular risk helps to maintain emotional stability after occasional or frequent negative events. (McHugh et al., 2017.) Additionally, resilience is a psychological factor that affects subjective wellbeing, and higher levels of resilience lower the risk for behavioural disorders, low academic performance or interpersonal conflicts for young people. (Perez-Fuentes, Jurado, Martin, Rubio, Linares, 2020.)

While resilience is an intrinsic capability, it can be acquired and developed (Wisniewski, Jia, Wang, Zheng, Xu, Rosson & Carroll, 2015). Moreover, in some cases, some people react positively to adversity, but at other times their reactions might differ. Despite the general assumption that negative life circumstances hinder positive adaptation, studies have found that people with history of adversities report better mental health than those who have had no history of adversity (Fletcher & Sarkar, 2013).

Resilience can be built through external resources in multiple ways, such as social support, a cohesive family unit, material resources, mentoring relationships, supportive peer network at school and offered community resources after negative events. Those factors can help teenagers to repair their mental well-being and reduce the negative emotions caused by risk exposure, which leads to greater emotional equilibrium. (McHugh et al., 2017.)

Studies have analysed the impact of parenting on a child's resilience. Trusting relationships with at least one consistent parent who sets clear rules and has similar views and provide emotional support and a blame-free parenting, living with both parents and being able to feel safe at home were also studied to be protective factors for adolescents. Additionally, having a role model outside the family who provides warmth and affection has a positive impact on internal resources. (Kelly et al., 2017.)

In a school setting, it is considered unusual to apply resilience-based approaches, even though its usefulness has been widely recognised (Rodríguez-Fernández, Ramos-Díaz & Axpe-Saez, 2018). Some studies have linked resilience to school engagement. For example, contextual factors related to resilience have been reported to effect school engagement. In a secondary education, resilience is related to subjective well-being and school engagement directly, and perceived academic performance indirectly. The feeling of being capable to cope successfully when facing adverse situations, has a great impact on the adaptability of the individual, both in school and personal situations. Therefore, resilience indirectly predicts school engagement, because resilient individuals see themselves as more capable to cope with the adversities faced at school, which makes them feel happier in their life. That in turn engages them more with the school environment. (Rodríguez-Fernández et al., 2018.)

4. Research methods

This study undertook a qualitative research approach in order to better understand how the subjects felt about the sudden switch to digital learning during the coronavirus pandemic. Furthermore, the factors affecting the experiences were considered in terms of resilience and coping. The literature review aimed to establish how upper secondary education has been affected by the increased usage of ICT. Moreover, the digital divide and gender differences related to technology were discussed. In addition, resilience and coping were introduced as protective factors in daily life as well as in crisis situations. Next, the research methods used are presented.

4.1. Qualitative research

When a group or population needs to be studied, qualitative research gives researchers the opportunity to better understand previously silenced voices. Moreover, it is also needed when there is a complex problem or issue that needs to be explored and understood in detail. People need to be allowed to tell their viewpoints without the pressure of expectations and biased views based on previous literature. If the purpose is to empower individuals to share their stories, hear their voices and minimise the power relationship between the participants and researchers, conducting qualitative research is a good option. Furthermore, qualitative research techniques help to understand the context or settings in which the problem or issue exists or when the problem cannot be separated from the context in which it sits. (Creswell, 2016.)

In this thesis, a qualitative research approach was chosen because this study aims to explore the experiences of Finnish upper secondary school students in an unfamiliar situation and their viewpoints, opinions and experiences need to be heard and understood. Qualitative research methodology allows students the opportunity to share their thoughts in detail and therefore find issues related to distance education and ICT use in a school.

The research questions were first formed by engaging the nexus of practice (Scollon & Scollon, 2004), which will be presented later in this chapter. That included conducting a literature review, following discourses in the media as well as discussing with upper secondary school students. Relevant studies were identified by conducting an electronic database search of the following themes and using reference chaining: upper secondary school education, digitalisation, distance education, digital divide, resilience, and coping.

The initial discussions with students revealed the use of ICT in secondary education varied and could have a negative impact on learning. Especially, the sudden shift to distance education during the coronavirus pandemic provoked discussions. According to previous research, some teachers had doubts about technology's potential in teaching and learning, whereas students also found benefits from it (e.g., Olofsson et al., 2017). This led to forming the first research question (RQ1) focusing on the use of ICT in upper secondary education.

- RQ1: How is ICT used in upper secondary school during distance education?

Moreover, the previous literature suggests distance education has some known challenges (Brändström et al., 2012), whereas crisis-prompted distance education research has

received less attention. However, the studies suggest it has downsides for both teachers and students (Bergdahl & Nouri, 2020; Niemi & Kousa, 2020). The discourses in the national media and discussions with secondary school students were indicating similar issues. Based on that, the second research question (RQ2) was formed.

- RQ2: How did teenage girls studying in upper secondary school experience distance learning during the COVID-19 pandemic?

In the media, there were discourses about the coronavirus pandemic, education, and resilience (Eskonen et al., 2020). Moreover, the literature review revealed resilience-based interventions being useful in a school setting (Rodríguez-Fernández et al., 2018). Resilience is also related to school engagement (Rodríguez-Fernández et al., 2018), whereas crisis-prompted distance education has been suggested to disengage some students (Bergdahl & Nouri, 2020). Research about coping with academic demands exists as well (Tu et al., 2020), although there was not much research about it during crisis-prompted distance education. In addition, observing the students attending distance education raised questions about the factors that could support it. As a result, the research questions related to coping (RQ3) and resilience (RQ4) were formed.

- RQ3: What kind of coping strategies did the teenage girls use to overcome the challenges faced when using ICT?
- RQ4: What kind of factors of resilience are coming up when discussing the adversities related to the use of ICT in school?

4.2. Sample selection and data collection

Semi-structured interviews do not have an exact or specific definition. However, semi-structured interview methods include the feature that some parts of the interview have been settled, but not all. For example, themed interviews follow predefined themes. Instead of detailed questions, the interview is adhering to main themes. (Hirsjärvi & Hurme, 2008.) In practice, interviews can be carried out in many ways. Individual interviews are commonplace, but group interviews can prove to be useful. When the interview topic concerns two interviewees, pair interviews can be conducted. To have successful interviews with young people, the researcher must make them motivated to answer, and the interview should be conducted in a quiet place without parents. (Hirsjärvi & Hurme, 2008.) Even though the interview structure might differ when conducting face-to-face versus online interviews, the quality of the data produced has been studied to be unaffected. (Shapka, Domene, Khan, Yang, 2016.)

The primary data gathering for this study was done by conducting semi-structured theme interviews. Semi-structured theme interviews were chosen so students' thoughts and opinions could be deeply explored. Additionally, it allowed the interviewer to ask more spontaneous questions when needed. This approach was considered to be the most beneficial because there was not much prior literature about the experiences of how distance education affected upper secondary school students during the pandemic.

After engaging with the nexus of practice, the interview themes could be defined in order to be able to answer the research questions. The main themes were *background, ICT skills, distance teaching,* and *coping strategies* (Appendix 1). There were many reasons for establishing those themes. The background and ICT skills were chosen to find out what could influence the students' experiences of distance teaching and ICT in general, which

is related to RQ2. They are also related to nexus analysis (Scollon & Scollon, 2004), which considers historical bodies as one of its main concepts. Additionally, resilience has been studied to be intrinsic (Wisniewski et al., 2015), but dynamic capability, which is related to personal history (Fletcher & Sarkar, 2013). Moreover, resilience is also related to family, support networks, personality factors, and individual positive factors (Perez-Fuentes et al., 2020). Therefore, by asking for some background information, we could acquire valuable data when considering RQ2, RQ3 and RQ4.

The theme related to the use of ICT in both traditional school and distance education was chosen in order to answer RQ1 and RQ2. The theme aimed to find out how ICT was used in school and how the students experienced the use of them. The last theme, coping strategies, was also chosen based on the literature review, which suggests that coping with academic demands is related to academic achievement (Tu et al., 2020). As a sequence from the use of ICT, the goal was to find out how the girls proceeded if there were issues related to technology. This related to finding answers to the RQ3. The themes mentioned above were gone through loosely during the interviews, by following the students' discourses.

The participants interviewed in this study were female upper secondary school students aged 16 to 18 from Finland. Many of them were studying in the same upper secondary school (9), but not all (Table 3). There were both second-year students (9), and third-year students (3). Most of them were friends of the author's younger siblings, and one of the interviewees was the authors' sister. Therefore, the interview participants were not randomly chosen but found through author networks by using snowballing. The interviews were conducted depending on the students' preferences, either face-to-face or virtually. The participants were asked beforehand to choose a place for the interview, and they were informed that the interview can be conducted individually or with friends. Additionally, to increase the motivation, the participants were rewarded with a small gift.

Table 3. Basic interviewee information

Group		**Number of interviewees**
Grade	Second year students	9
	Third year students	3
High school	Music-oriented high school	9
	Other high schools	3
Total		12

All the interviews were voice recorded by the author and transcribed by a third-party company. All the records and notes gathered from the subjects during the interviews were anonymised and will be destroyed after the thesis has been accepted. The students were asked to sign a written consent explaining the study and the use of the material collected.

4.3. Data analysis

Data analysis in this study was conducted using various tools and methods. First, content analysis was applied to the interview material to identify the key themes. Brief COPE (Carver, 1997) and READ scale (Hjemdal et al., 2006; von Soest, Mossige, Stefansen & Hjemdal, 2010) were used to categorise the findings relating to resilience and coping.

After that, nexus analysis by Scollon & Scollon (2004) was applied to deepen the understanding of the studied issues.

4.3.1. Content analysis

The method of describing the meaning of qualitative data in a systematic manner is considered qualitative content analysis, which, by its character, reduces data and is systematic as well as flexible. Successive parts of the material are assigned into categories of a coding frame. This helps to reduce the amount of material and helps researchers focus on points that are related to the overall research question. Some coding frames can contain a vast number of categories and subcategories, but the number of them is limited by the researcher's ability to handle them. The systematic nature of it requires coding to be carried out twice, at least in some parts of the material. It makes sure category definitions are of good quality. Flexibility means that the coding frame must always be matched to the material, which ensures the categories match the data. (Schreier, 2013.)

In this thesis, the categories are based on the research questions, previous literature, and interview data. After setting the research questions and conducting the literature review, the author already had an understanding of the base knowledge of the topic. During the interviews, and after them, the interview data were categorised, which was affected by the earlier research, but grounded on the interview data. Moreover, the categories used related to resilience and coping were adopted directly from the scales chosen without modifications. Because the interview themes were predefined, those influenced the categorisation.

4.3.2. Brief coping orientation to problems experienced

Carver (1997) developed a scale to minimise the participant burden when measuring coping, called Brief Coping Orientation to Problems Experienced (Brief COPE). It is based on Coping Orientation to Problems Experienced (COPE) inventory, which has been used in many health-relevant studies. While the full COPE is divided into 60-items, each of them including 4 items and containing some redundancy, Brief COPE tried to overcome its burden for participants by consisting of 14 scales with two sub-items each. The reduction and compilation of the new scale was adapted based on the previous research about coping and the original COPE inventory. Brief COPE consists of 28 items in total that describe different coping reactions, some of them adaptive, while others are problematic (Table 4). The factors found by Carver (1997) were very similar to those in the original COPE, and based on the data, the internal reliability of the shortened scale existed. (Carver, 1997.)

Brief COPE by Carver (1997) was chosen in order to analyse coping because of the scale’s suitability. It is short and easy to modify to suit the purposes of this study. It is validated and used by multiple studies, in many countries, and with adolescents. The categorisation and descriptions of the scale items are clear, which makes it simple to use. Classifying the aforementioned coping strategies has been proposed from different angles, such as denial being either dysfunctional or emotion-focused. In this thesis, we use the same classification as Cooper et al., (2008). They are divided into three classes (Dysfunctional coping, Emotion-focused coping, Problem-focused coping) based on the coping strategy.

Table 4. Brief COPE items by Carver (1997), categorised by Cooper et al (2008).

COPING STRATEGY	CATEGORY	SUBITEMS
PROBLEM-FOCUSED	Active coping	I've been concentrating my efforts on doing something about the situation I'm in
		I've been taking action to try to make the situation better
	Planning	I've been trying to come up with a strategy about what to do
		I've been thinking hard about what steps to take
	Using instrumental support	I've been trying to get advice or help from other people about what to do
		I've been getting help and advice from other people
EMOTION-FOCUSED	Positive reframing	I've been trying to see it in a different light, to make it seem more positive
		I've been looking for something good in what is happening
	Acceptance	I've been accepting the reality of the fact that it has happened
		I've been learning to live with it
	Humour	I've been making jokes about it
		I've been making fun of the situation
	Religion	I've been trying to find comfort in my religion or spiritual beliefs
		I've been praying or meditating
	Using emotional support	I've been getting emotional support from others
		I've been getting comfort and understanding from someone
DYS-FUNCTIONAL	Self-distraction	I've been turning to work or other activities to take my mind off things
		I've been doing something to think about it less such as going to movies, watching TV, reading, daydreaming, sleeping, or shopping
	Denial	I've been saying to myself "this isn't real"
		I've been refusing to believe that it has happened
	Venting	I've been saying things to let my unpleasant feelings escape
		I've been expressing my negative feelings
	Substance use	I've been using alcohol or other drugs to make myself feel better
		I've been using alcohol or other drugs to help me get through it
	Behavioural disengagement	I've been giving up trying to deal with it
		I've been giving up the attempt to cope
	Self-blame	I've been criticising myself
		I've been blaming myself for the things that happened

In this study, Brief COPE was applied so that the students were not assessing their coping techniques. Furthermore, the interview questions were not formed based on the Brief COPE. However, one of the main themes, coping strategies, was formed in order to explore those. The interview data was categorised afterward by the author by comparing

the interview discussions to the scale items. The stressors were defined as the switch from traditional teaching to distance teaching, the COVID-19 pandemic, and other school-related stressors such as the issues with ICT.

4.3.3. Resilience scale for adolescents

Hjemdal et al., (2006) developed a scale to measure adolescent resilience. The developed tool was a 5-point Likert scale questionnaire consisting of five factors and 28 items. Higher scores indicated a higher level of resilience. (Hjemdal et al., 2006.) Resilience Scale for Adolescents (READ) is based on Resilience Scale for Adults (RSA), a scale that measures adulthood resilience, and it has the same factor structure. Therefore, longitudinal studies from adolescence to adulthood are possible by using these scales. (Hjemdal, Aune, Reinfjell, Stiles, Friborg, 2007.) The second iteration of the READ scale adjusted it to 23-items (Table 5).

Table 5. READ scale items and standardised factors in 23-item version by von Soest et al., (2010).

ITEM	FACTORS
PERSONAL COMPETENCE	Goal orientation
	Realism
	Competence
	Self-confidence
	Positive outlook
SOCIAL COMPETENCE	Positive social orientation
	Making contact
	Humour
	Comforting others
STRUCTURED STYLE	Aims and objectives
	Planfulness
	Organisational skills
FAMILY COHESION	Shared values
	Comfort
	Common positive outlook
	Support
	Shared activities
	Common perspective
SOCIAL RESOURCES	Encouragement
	Cohesion
	Support
	Help
	Appreciated by others

The improved 23-item version was shown to be a reliable and valid scale. It was considered relevant, for example, when assessing adolescents at risk and identifying both

their strengths and weaknesses in life areas that related to resilient outcomes. (von Soest et al., 2010.) In the original RSA, *personal competence* measured the level of self-esteem, self-efficacy, self-liking, hope, determination, and a realistic orientation to life. *Social competence* focused on extraversion, social adeptness, cheerful mood, an ability to initiate activities, good communication skills, and flexibility in social matters. Upholding daily routines, planning, and organising were measured by *personal structure* item, whereas *family coherence* focused on the number of family conflicts, cooperation, support, loyalty, and stability. *Social support* measured the access of support by friends and relatives as well as intimacy, and how well the individual can provide support to others. Therefore, all of the resilience categories including personal/dispositional attributes, family support and external support systems were composed into an RSA scale. (Friborg, Hjemdal, Rosenvinge & Martinussen, 2003.)

For this study, the READ scale was chosen for its suitability. It has clearly defined items and it has been validated by multiple studies, for example in both Nordic and European countries (e.g., Perez-Fuentes et al., 2020). Even though it was originally meant to be used as a self-assessment questionnaire, it has been adapted in this study so that the author analysed the interview material. In order to observe the factors of resilience, the whole interview was analysed. The interview data were assessed by the author by using the READ scale so that the students' discussions were analysed by comparing them to scale items were suitable. As such, the interview questions were not based on the READ scale, but the answers were categorised afterward.

4.3.4. Nexus analysis

Nexus analysis by Scollon & Scollon (2004) was applied in order to gain a thorough understanding of the topic. Scollon & Scollon (2004) describe nexus analysis as an ethnographic methodological strategy, which is both discourse analysis and motive analysis. It aims to change the nexus of practice and consists of three tasks or activities, called *engaging the nexus of practice, navigating the nexus of practice,* and *changing the nexus of practice* (Figure 1). The analysis is conducted from the ethnographic content (what is said), discourse analysis (how), and motive analysis (why). The sequence starts with engaging, after which the actions of navigating are taken, and finally, the change. (Scollon & Scollon, 2004.) Since this thesis only has a limited time span and resources, only those tasks and activities, which were seen to support understanding the main actions were applied.

Many concepts are essential for nexus analysis. *Social action*, also known as mediated action, refers to any action conducted by an individual and having reference to social networks. In the context of nexus analysis, any action is inherently social and carried out using *mediational means*. Those represent cultural or psychological tools, such as a joystick or English alphabets. *Historical body* refers to the bodily memories in an individual, also known as personal habits; the same role can be performed differently depending on the individual's history of personal experiences. The historical body combines the goals and purposes, life experiences and physical conditions. *Interaction order* describes the different roles and role expectations in the situation. The other people in the situation affect the behaviour of the individual. The behaviour might differ depending on whether the person is alone, in a group, or who they're with. For example, behaviour while chatting with friends might differ compared to when talking with a medical doctor. *Discourses in place* include diverse kinds of discourses, which circulate at different speeds. Slower discourses could be the aging of the built environment, and faster discourses the conversational topics among friends. (Scollon & Scollon. 2004.)

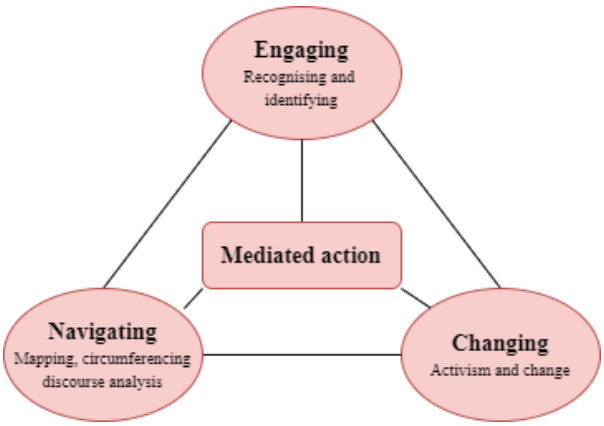

Figure 1. Nexus analysis activities. Adapted from Scollon & Scollon (2004).

Nexus analysis starts by placing the discourse analyst within a zone of identification, and the opening task is referred to as *engaging the nexus of practice*. In Nexus analysis, both the first and the ultimate problem are to discover which social actors and actions are crucial in the production of social issues and introducing social change. Historical bodies, interaction order, and discourses in place constitute an intersection, where social action occurs (Figure 2). To establish a zone of identification and recognise the nexus of practice, five practices are introduced: Establish the social issue you will study, discover the crucial social actors, observe the interaction order, determine the most significant cycles of discourse, and establish your zone of identification. (Scollon & Scollon, 2004.)

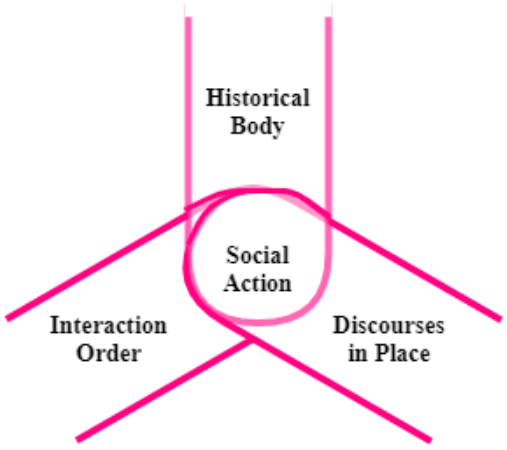

Figure 2. Historical body, interaction order and discourses in place are forming an intersection within which the social action occurs (Scollon & Scollon, 2004). Figure adapted from Scollon & Scollon (2004).

After the first task of engagement, the zone of identification and the crucial mediated actions are recognised. The second task is called *navigating the nexus of practice*, which represents the primary work of a nexus analysis. The aim is to go through actions and anticipations in time, both historically and forward. This task is about mapping the cycles of people, places, discourses, objects, and concepts circulating through the micro-semiotic ecosystem. The aim is to place a circumference of relevance around the nexus of practice, to detect anticipations and emanations, links and transformations, and their inherent timescales. The concluding phase of the nexus analysis, *changing the nexus of practice*, focuses on analysing the change in the nexus of practice through re-engagement. (Scollon & Scollon, 2004.)

In this thesis, we aimed to answer the research questions by expanding the time and space context by using the tools provided by the nexus analysis (Scollon & Scollon, 2004). However, adapting the nexus analysis did not follow the field guide profoundly, because the scope of this thesis was quite narrow. Comprehensively applying nexus analysis would have required too much effort, so only some parts of its practices were applied when considered valuable.

Because COVID-19 and related issues are still unexplored topics, deeper analysis is needed in order to identify the main issues. Nexus analysis provides a way to comprehensively cover the phenomena by considering not only the present but also the things affecting the present, such as past and future goals. As discussed in the previous research, secondary level education is going through big changes, and the pandemic has brought its own impact on top of it. There could be many factors affecting the students' experiences of ICT that are invisible in the situation itself. Moreover, nexus analysis was considered valuable when exploring the reasons behind the digital divide as well as resilience. For example, determinants of the digital divide include, among other things, material, cultural and personal factors (Scheerder et al., 2017). Additionally, academic coping has been studied to be related to, for example, parents' socialisation (Tu et al., 2020), and in the right environment everyone could be resilient (Twum-Antwi et al., 2020).

In this study, the process started with engaging the nexus of practice. Within the study setting, this meant exploring previous studies and conducting a literature review. The literature review produced a dataset of 46 publications that included mostly scientific articles, but also a newspaper article, and reports from Finnish authorities. In addition, because of the pandemic and the actions taken to prevent it, children's learning, distance teaching, and COVID-19 were heavily discussed in the media. Therefore, it was effortless to follow the current discourses about the topic. Moreover, discussing the topic with social actors was part of this phase.

From the phase of navigating the nexus of practice, this thesis adapted two core concepts. Historical body and interaction order were applied in order to analyse the topic more profoundly. The data gathered during the interviews were analysed by focusing on those concepts as explanatory factors. Discourses in place were left out to narrow down the scope. The final phase, changing the nexus of practice, was not considered as it was not the purpose of this study. However, it is impossible to avoid that when the researcher enters the nexus of practice. Discussions with the girls evoked reflection and discussions, which alone brings change.

4.4. Study setting limitations and reliability

The interviewees were found using a snowballing strategy by inviting the author's siblings' friends to participate, as such the author knew some of the interviewees personally. The sample is not random, and one of them is the author's sibling, which might influence the results. Most of the interviewees were from the same upper secondary school (9 participants), but not all of them. They were either studying in the second year or third year of upper secondary school. All the interviewees were girls. The author did not have previous experience in conducting interviews, which may affect the material. Moreover, interview material was translated by the author, who is not a native English speaker.

Factors of resilience and coping strategies were not assessed by the interviewees themselves, but by the author. This raises the question, whether resilience and coping can be assessed by external individuals, and does that assessment differ from a personal assessment? Objectively analysing the behaviour of others might be difficult and different from the students' own experiences. Moreover, because of the small and not randomised sample, the results are not generalisable, but rather descriptive. The results present the experiences of the students interviewed for this study, not the general student population.

Before the interview, the students received an agreement explaining the purpose of the study and an explanation of how the data would be used. They were informed that they can withdraw their participation or data from use at any time. Furthermore, before the interview, it was stressed that students did not have to answer any questions that made them feel uncomfortable. They were also advised to ask questions whenever needed. Moreover, they were informed that the final thesis will be shared with them. The interview material is anonymised so that it is impossible to recognise individual responses from the analysis.

5. Findings

This chapter presents the finding of this study and analyses those by applying nexus analysis. The social actions relevant for this thesis are attending to distance teaching, using ICT in the school context, and coping with ICT-related challenges. From nexus analysis, the concepts of historical body and interaction order are applied to examine the aforementioned topics. The following subsection considers ICT skills. Thereafter, experiences of distance teaching as well as using ICT in upper secondary education are discussed from the point of view of the students. Lastly, the factors of resilience and coping strategies related to subjects discussed before are observed from the discussions and analysed by using categories from previous literature.

5.1. ICT skills

The girls were asked to describe their ICT skills. There were different approaches for that. Some of them saw the skills as how they manage to complete the tasks assigned at the school. In turn, others defined them compared to others. Their skills could be divided roughly into three categories, namely insecure, average, and confident. There was variety among the categories, and some of them were stronger in some areas and weaker in others. In the end, the division was done based on the girls' own description of their abilities and by analysing the full interview (Table 6).

Table 6. The students had varying confidence towards their ICT skills.

ICT SKILLS	IDENTIFIER
CONFIDENT	S1, S5, S7, S11, S12
AVERAGE	S2, S4, S9, S10,
INSECURE	S3, S6 S8

Five students out of 12 were located into the subcategory of confident, and they described their skills as "pretty good" or "I can use". Students confident with their ICT skills discussed succeeding in their studies and often not encountering ICT-related problems they could not overcome, albeit not being computer geniuses: "I'm like good, but I wouldn't [laughs] call myself as an IT genius. Rather I can do what is needed, but I'm not the kind of person that I'd know terribly everything, for example, about computers or about programming." (S1) The skills were assessed being enough to handle the tasks they needed at the school context

In the subcategory of average were categorised 4 out of 12 girls. They described their skills for example as handling the ICT "pretty well", "quite moderate", or being "on the same level with others". There were two areas where the girls discussed their relationship with technology. Those were related to specific software, use of computers, their personal interests and how those shape their ICT skills. They mention, for example, modern calculator software as challenging to learn to use: "Well, the most complex applications to use are those related to mathematics, like calculators and such, and those were something new so they have been very hard to learn, and I still cannot use them perfectly." (S10) As to personal interests, not being a gamer was mentioned as one reason for not

being a competent user, even though the same girl confidently reported: “Yes I understand them [computers].” (S2) ICT was seen as complex by some, and therefore not interesting. One girl discussed being relatively good with computers, better than girls on average, but also encountering many problems.

There were three girls whose skills were observed as insecure. They described their skills as “quite bad”, “not-so-good”, and “I don’t feel being good at it. It’s not my strength”. Assessing the skill levels was found to be complex. Sometimes, there were indications of the expertise being average, but self-confidence lower than average which could have an impact on the students’ assessment of their own skills. The girls being more insecure with their skills were analysed to compare themselves to others. They could assess their ICT skills average, except when compared to others. In those cases, the skills were recognized as miserable. The peers were mentioned being more capable to use ICT and understand the problems faced: “Quite a few, my or our age, can [use ICT]. Just basic calculator usage and more. And understand more of what the cause of the problem could be. Then, I don't understand at all.” (S6)

During COVID-19 restrictions, the teaching was carried out completely remotely. Because of that, succeeding in studies required, among other things, managing the use of ICT. To provide insights into the factors explaining their confidence with ICT, one main interview theme was focusing on their background. Findings revealed key factors that were related to their confidence with ICT (Figure 3). Next, those factors in their historical bodies are discussed in more detail.

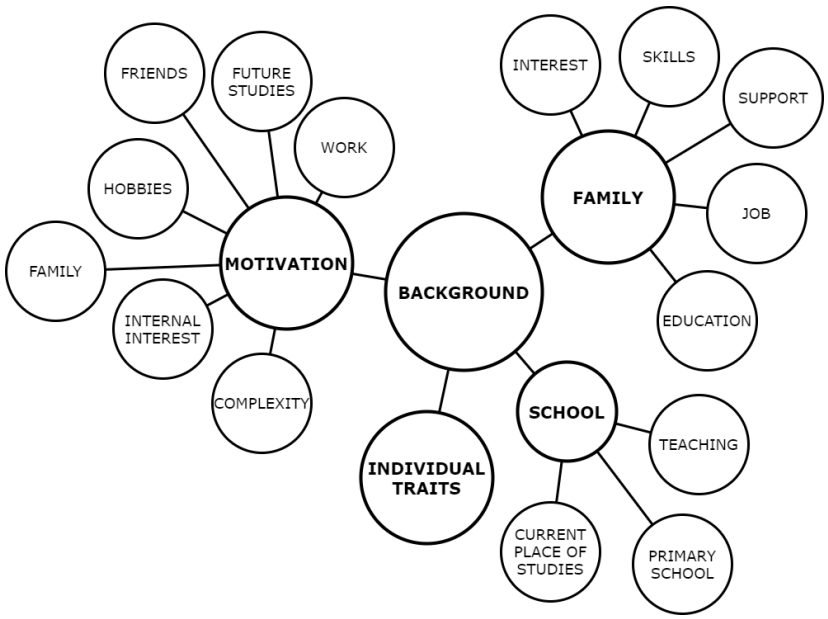

Figure 3. The key factors that came up during the discussions related to interviewees experiences with ICT.

5.1.1. Family

When considering their background related to family, interaction order and historical body-related aspects were clearly identifiable. Many girls, despite the observed ICT skill level, mentioned having someone in their family who was skilled using ICT. In almost every family, dad was considered the most skilled with technology.

The girls who felt confident with their skills, discussed their family members managing using ICT as well. There were many reasons behind the parents' expertise. First, some of them utilised computers at work a lot: “Yes, my dad is an engineer, and he carries out all his work on the computer so. Most likely for that, he knows so well and has got all the education and such.” (S12) Moreover, sometimes they were just characterised as good at it: “Dad is an engineer-person." (S11) Many of the girls also discussed the fathers having intrinsic motivation for using technology: “Dad is really good with all these information technology devices. He has never studied those, but you can always ask him if something is wrong.” (S5) Furthermore, mothers were discussed using ICT at work. In addition, siblings were mentioned as being capable to help with ICT-related problems, and sometimes the interviewees themselves were able to help their siblings.

The students' historical bodies in terms of parents' skills and motivation towards ICT also reflected in their skills. By providing an environment that does not prohibit the use of ICT, but rather encouraged it was mentioned as one factor: "Parents, of course, when I was a little, never denied anything, I mean practicing those skills on the computer for example.” (S5) On the contrary, not all of them used computers in the past: “I didn’t even have a computer before upper secondary studies [laughing].” (S1) The interaction order and the influence on the parents in their past could therefore act as a motivator to utilise computers, which in turn could improve their confidence with technology.

Moreover, sometimes the roles inside the family had an impact on the skills. One girl discussed being first-born and helping younger siblings to use ICT, which as a role could make her take responsibility of the learning. The role of the parents as ICT users had an impact as well. The parents were sometimes acting as role models, for example when challenging themselves on free time: “He [dad] has had that kind of interest in it. He has been fixing iPhones and ordered parts from China and codes. Like terrible instructions and still, he fixed it by himself, and I was like. Well, he said this was the last one he is going to fix. That it was terrible.” (S11) Additionally, sometimes older siblings, who had been gaming, had inspired the girls to use computers in the past: “And of course, my big brother liked gaming as well.” (S7) Some girls mentioned still gaming or been gaming in childhood, which could have been related to girls’ intrinsic motivation and parents' attitudes as part of their historical bodies.

Among the girls having average ICT skills, the role of the fathers as part of their historical bodies in ICT was obvious: "He is an IT genius in our family [laughing].” (S4) Dads were mentioned having an impact on their skills because they had supported them with it since childhood: “Well, dad actually, he doesn’t say that... Do by himself, but he tells what should be done and through that, you learn yourself.” (S4) Regarding the interaction order, the fathers played a significant role as being a great support with computer problems. The reason for that was because of not just telling what to do but explaining the things understandably while demonstrating: "Somehow he is able to say the things so that even I understand [laughing], all the computer things.” (S2) Three of them mentioned father when discussing the skills and support got from home and one parents in general but especially mom. Two of them also named siblings, but those were not mentioned as being that big support: “I'd say that dad is the best in our family [with computers]. Except, well no, because my brother is studying too or works in IT. So, he is likely the best one, but with practical skills, dad is the best.” (S10)

The reasons behind the parents' expertise were similar as with confident users, such as their studies and profession: “He has always been very... He has been studying engineering and such and therefore he has been using a lot of those computers and he can teach me as well.” (S2) The interaction order between the child and parent, both in the past and present, could have seen to influence their historical bodies. Moreover, fathers were able to demonstrate and explain things clearly, because of their historical bodies as skilled ICT users. They all mentioned having someone skilled with ICT at home, therefore their historical bodies consist of people who can assist them with ICT and support the use of it.

Unlike the more confident ICT users, the girls who were analysed to be the least confident using computers were not mentioning having parents who could help with ICT-related problems: “They don’t know any better than yourself [parents].” (S3) Nonetheless, they all mentioned having at least one sibling who was skilled in using ICT: "Well, siblings quite a lot. Brother and sister at least, have quite a lot to do with those things [computers]. Well, parents are not using much except like for work stuff and such." (S8) That could indicate challenges for getting help during distance teaching because the other students mentioned parents being important support when facing problems: “It affects, and just that can your family members either. That can they help you at home.” (S6) Their siblings' ICT skills had been acquired in school, through their personal interests, or at work. Regarding their historical bodies, they did not have role models at home or anyone that could motivate them to use ICT.

5.1.2. Motivation

Regarding their historical bodies related to ICT skills, motivation was another theme discussed. Historical body-related things were obvious. Discourses revealed different factors related to their past experiences (hobbies in childhood), present (managing current studies), and future goals (job, post-graduate studies). All the girls mentioned using either smartphones, game consoles, or computers on leisure time, and some of them at work. Some students considered them nothing but mandatory to learn for school, whereas for others they were a tool for entertainment.

One confident girl mentioned enjoying the use of ICT at school and remembering computer classes being motivating already in the primary school: “It was always the highlight of the day when in a lesson teacher brought a computer, a big cabinet, a computer cabinet, to the class and was like ‘let’s do this and that’.” (S5) In turn, another confident user discussed not being interested in computers at all: “I don't feel like just being on the computer. I can't focus that much on one certain thing.” (S1) However, she mentioned using computers to watch series and at work. Many of the students mentioned having a computer at home since childhood, where it had been used for example for gaming or storing photos. Nevertheless, none of the confident girls discussed doing it currently: “I know you can do all the things related to computers. Like, I know people who are gaming. And through gaming, they have learned, they have needed to know how to boot something and so on in those games, but I have never played anything. Well, okay, I used to play online games [laughing]. Like girl's games when I was younger, but I’m not. I haven’t been using [computers].” (S11)

Moreover, motivation towards ICT among the girls having average skills varied as well. Motivations and reasons as part of their historical bodies were interest towards specific activity, such as hobbies or will to keep up with the digital development. Typically, computers were not used much in the leisure time. One reason for that was the complexity of them: “Not much, they are not like, information technology is such a complex thing at least for me, so I don’t actually like to use it.” (S4) However, she continues writing and photo editing being easier, because she has been doing those since childhood, and her father has been encouraging her: “Yeah, pretty much, that I like writing pretty much. And I am editing the photos of my friends and some of what they want so I edit those then.” (S4) Additionally, computers were used for online shopping: “Online shopping [laughing]. I don’t actually use computers beside that.” (S2) Smartphones were discussed as easier to use because they were utilised more regularly. Additionally, some of the girls having average skills did not mention using computers at all outside the school context: “Well, probably, mainly at school those [ICT] are [used].” (S9)

Some aspects in their historical bodies, such as boring lessons and curious character could be analysed as a reason for the motivation: "Yes, you notice that if it's boring at school or something, then you easily start browsing some computer settings [laughing] and then you find all different things from there so, therefore, your own curiosity and such have an impact, for sure.” (S10) Moreover, future goals as a part of their historical bodies directed their actions and provided motivation to learn to use ICT: “I'm not particularly, perhaps interested. But then, either way. Nowadays, the importance of them [computers] has grown and for this perhaps I want to keep up.” (S9)

The motives and reasons to use ICT varied among the more insecure students as well. While most of them were interested in gaming, one of them discussed her historical body not including much interaction with computers: “I got a computer only now when I started in upper secondary school so, I have been mostly using those school applications.” (S8) Moreover, even though one of the girls used computers at work, it was considered to cause more headaches instead of supporting the use of ICT in general. Smartphones and gaming were considered easy, because the students had more experience of those in their historical bodies: “Yes, gaming. But nothing else. Like same, using smartphone and doing schoolwork but that’s it.” (S3) The lack of motivation was considered being because they could not recognise the value of learning ICT skills: “In my opinion, that gives them [boys] probably more motivation to learn those, new things on the computer because if they will employ those in some games or something. So, through that, they learn then, girls are assuming that 'I will never use this app again'. Only in some situations, so then they [girls] are like ' I don’t even want to learn this'.” (S3) Without intrinsic motivation, learning ICT might feel useless.

Whereas some students found motivation from the idea of succeeding in their studies, others found ICT skills unnecessary. Moreover, they considered themselves as girls, who think of ICT being uninteresting, while boys were considered gamers with intrinsic motivation to use ICT. Regarding interaction order, the influence of their role could then direct their interests towards ICT. Additionally, the impact of their historical bodies on the motivation could be identified when considering their family and friends: “My parents have been always just using computers for work, so therefore I haven't been using them terribly either. My friends aren't using computers much either, therefore, I've been doing it less when anyway the interest hasn't been necessarily focusing on those.” (S8) Hence,

friends and family as part of their historical bodies might have an effect on motivation, at least for the more social teenagers. If they have family members or friends that are motivated to use ICT and support them, they might get interested of it easier.

5.1.3. School

As part of their historical bodies, the usage of ICT in primary school was discussed. A couple of more confident girls mentioned having so good base skills, that they found it difficult to assess the sufficiency of the teaching in primary school: “I don’t know, I mean it feels like I had so good base for it [ICT], perhaps someone who doesn’t necessarily have so good base skills could tell that what they would have wanted to know better or what it would be.” (S5) Part of confident girls mentioned ICT being used frequently already in the primary school: “I have had experience earlier as well, already in lower secondary school, we used a lot of information technology. And actually, in lower secondary school there were exactly the same. We had Word and those LibreOffices that we are using currently in an upper secondary school as well. There you basically learned those.” (S7)

In turn, a couple of confident girls reported computers were not used frequently in primary school: “I feel like now in upper secondary school you have been really learning like, everything. Like before that, for example, in lower secondary school, we didn’t use, almost any of that.” (S12) However, the skills were still experienced sufficient, because their teachers had provided a comfortable environment to seek help. Additionally, they discussed their fathers being a great support. Moreover, one confident girl reflected the skills acquired in childhood had been a significant benefit for her, because they had not been using computers much in primary school: “(-) it must be, probably, very difficult for those who really don’t know anything about computers, to go to upper secondary school and suddenly to do everything on computer. In that sense it was not that hard for me. But I don’t remember getting much information technology teaching or instructions for going to upper secondary school and then you need to do everything on computer.” (S1) Therefore, if school related historical body does not provide ICT skills good enough, childhood or family environment might fill in those knowledge gaps. Despite the lack of ICT-related education in primary school, the more confident girls felt their base skills had been good enough for secondary studies.

Couple of girls having average skills mentioned that during lower secondary school the use of ICT had been increasing: “They have been developing during lower secondary school, just when you started using computers and doing projects, that’s when they improved like you learned to use all the image processing and writing applications.” (S4) The increased usage of computers had been improving their skills, which was seen beneficial as preparing for upper secondary studies: "It has been a great help that the computers were used a lot in the 8th and 9th grades.” (S2) In turn, rest of them discussed computers were not used in primary school: “We didn’t actually do anything with computers in primary school.” (S10) Shift from primary school to upper secondary school brought major changes for those whose studies in primary school did not utilise computers: “Especially when advancing from lower secondary to upper secondary school, the IT skills needed in studies were increasing terribly.” (S9)

The increased usage of ICT when starting upper secondary studies came up also among the girls being more insecure with their skills: “Well, in lower secondary school we used somewhat computers and iPads but. Not incredibly much, like I was used to making all the notes for example to notebook and. Now, in upper secondary school, we don’t do that

anymore.” (S6) Even though the ICT had been used in some level in primary school, the applications used were assessed as much easier: “Not much, earlier I hadn't been using much, well, in lower secondary school we did something small, but there weren't applications this challenging yet.” (S8)

One student had been observing the diverse skillsets in the class: “I don’t know, in upper secondary school you notice that some people don’t have those ICT skills, I don’t know if it’s because of the lack of studying in primary school or didn’t they get enough teaching for those in primary school.” (S5) In terms of their historical bodies, the girls were considering the reasons behind their ICT skills. One thing coming up was the lack of help received at school: “Teachers’ help. Or the lack of it.” (S6) The reason for the lack of help was discussed to be for example the group sizes: “Of course, the schoolteachers have a huge impact. Our teacher who taught us to use those computer applications was very good, but it was a big group of us. So, sometimes it [teacher] couldn't help as much as I would have hoped.” (S10) One girl proposed, that there could be separate time reserved for comprehensively learning to use applications in different courses: "It should be, really, scheduled into the course timetable in the upper secondary school so that there is enough time reserved. To go through those things." (S11)

Moreover, the lack of instructions was discussed: “It’s maybe so that, at school, there haven’t been good instructions, in my opinion, at least for me the instructions to use those applications has been poor.” (S8) Part of the girls mentioned attending ICT course in the beginning of their upper secondary studies. On the contrary, because of their historical bodies, it was not option for all: “No, because just when I took that course, I selected it so that I’d learn to use those, but it was cancelled. There weren’t enough participants, so it was a bit like, well, where do I get help now, but well, the teachers were trying always to help, at least in the beginning (-).” (S2) Furthermore, the course contents varied. Whereas some students found the course useful, others hoped that the course contents had focused on more important topics: “We had, kind of that we were painting apples and volcanos on Paint. So, it was a bit like, I was wondering that for what is this needed.” (S4)

5.2. Distance teaching

The whole arrangement of shifting to distance teaching happened unexpectedly, which was shocking for the students: “Well, the first month was completely, it went crazy, back then nobody understood a thing.” (S7) Even though the students had been using ICT in their studies before, the distance education was a huge change, because the teaching was carried out completely remotely. Adaptation would have been easier if there had been more preparation time: “Perhaps the uncertainty when you don’t have experience of doing those things. If we had had, for example, a week at school to kind of get prepared to distance teaching so that would have been very useful, but we didn’t, so we had to kind of learn a lot by ourselves.” (S10) Next, the findings related to how the students experienced distance education are discussed. The issues are analysed by exploring the students' historical bodies and interaction order.

5.2.1. Learning

Regarding learning, distance education had both positive and negative impacts (Table 7). In general, learning was considered getting harder: “Probably for most, it [studying] has got more difficult during distance teaching, if you ask our peers.” (S3) When considering

learning, the majority was hoping to return to traditional classrooms: “When you consider those [matriculation examination grades], you are like, hopefully, [we] could get back to school, get there to learn better.” (S2) However, it also improved learning, for example, by providing alternative ways for it: “So that you have got kind of your own freedom to do things, then you have found your own best style to study, that there isn't the group’s common way to do that.” (S4)

Table 7. Learning and distance teaching: How it got easier, how it got harder.

+	-
Concentration	Responsibility of learning
Sports without social pressure	Sports
New skills acquired (ICT, initiative)	Music lessons
Courses with writing essays	Mathematics and subjects which require for example certain applications
Discovering alternative learning methods	Lack of help

One fundamental issue coming up in almost every interview was the lack of help, especially in mathematics. That had an effect on learning when consulting peers was harder and the teachers did not always notice the questions: “In mathematics when I was alone, if you didn’t understand something, then you couldn't be to the person next to you that ‘hey hey, what’s happening, could you help’. And it was not possible to say to the teacher that could you have a break, teachers rarely heard that and talked to the microphone and didn’t read the chat, so it was a bit like, ‘hey...’” (S4) Not receiving the help needed influenced the course grades as well: “Yeah, when you couldn’t get help with it, that how do you do those figures with the calculator. So, then you noticed, it reflected on the grade as well that you didn’t get the help you would have maybe needed.” (S6)

Regarding learning in distance classes, the experiences of its benefits were varying. For example, one of the girls mentioned sports and other practical subjects being difficult to study remotely, whereas another one preferred doing sports remotely: “Rather you do the sports classes at home so that you go jogging instead of being in the school sports.” (S8) This could be due to the lack of social pressure or bad experiences in PE related to their historical bodies. Moreover, practical subjects, like music lessons were considered feeling strange when held through WhatsApp call: “Yeah, it was a bit weird that through WhatsApp call you play there piano to the teacher and then it's a bit (-).” (S12) It led to problems, where teachers could not see the keys, or students accidentally muted the phone: “That was good. Then the teacher is like now I cannot see your piano keys.” (S11)

In general, History, English, and other subjects consisting of writing essays were easier and more comfortable because they enabled getting deeper into the topic and progressing at your own pace: “And for me, history courses were also very nice because. Writing essays and then there was writing the study. Yeah, those were really nice because you were able to independently really get into the topic. And then through that, you learned it, so we didn't have the last classes at all, but you could do [exercises] at your own pace as long as you returned them due to a specific date.” (S3)

Distance teaching did not only affect the learning related to the curricula, but the students mentioned acquiring new skills such as improved ICT skills and initiative. Moreover, novel skills included typing faster, using applications like Teams and math calculators: “Well, during the distance teaching I learned to use those applications, like the calculator and another kind of math application, that I wouldn’t have necessarily learned to use during the spring otherwise.” (S8) The discussions related to learning also brought up the students’ historical bodies in terms of future goals, which were acting as motivators for learning to use ICT: “And then, probably, somehow you learn to use different applications faster in the future. When you know how everything works in general and such. That, not everything, comes out of nowhere if you should now use, for example, some new kind of learning application or something like that.” (S10)

The students’ historical bodies were equally affecting how they managed the increased requirements of self-management. Some of the students mentioned, that keeping self-control had felt extremely hard for either themselves or their friends. One of the girls told already knowing, that the laziness during the distance teaching will have an impact on the matriculation examination: “Well probably because in distance education one does not study [laughs] like you don’t really read those books or study to those exams and you don't necessarily do those exercises so of course, it probably pays off in matriculation examination that ‘oh well we studied this course back then and this as well’, that I should have studied these things.” (S5) In turn, some of them found it easier to focus on distance classes: “In my opinion, it has been a suitable solution at least in my case. That somehow, I have been able to focus better. There are no other students next to you teasing and talking. Concentration stays better on the computer screen then.” (S7)

However, the teaching methods could support the learning by providing a routine: "Yeah, you noticed, and it felt easier when those were. Placed. That, classes, were according to the schedule and there was always roll call and such. Then, it felt kind of easier. That there is always the reserved time that when you do those exercises. If everything would have been like. These need to be done due to some specific date so you couldn't have, maybe that well, taken [the responsibility]...” (S12) The students discussed by themselves not being ready for the independence that was required in many courses during distance teaching. However, many of them concluded that handling the studies is up to themselves: "There is much more responsibility. But it's probably depending on oneself. That how you handle things." (S12) The findings reveal, that even though the academic success was considered being on the students’ own responsibility, not all of them were ready for such a responsibility: “I feel kind of safe going there [school], like really, where is the teacher, to go to the classroom. It’s somehow safer in my opinion to really go to school to study. So that yourself. Rather than if you by yourself, like at home, studied everything alone.” (S11)

5.2.2. Teaching

During distance education, various teaching methods were applied (Table 8). There was not much difference in the applications used, but rather in the teaching methods: “Applying information technology didn’t vary much, of course, when we are using the same applications. But then, of course, those teachers’ teaching methods have been varying a lot between the classes.” (S1) The teaching methods utilised had both positive and negative effects on the learning. In the best cases, they supported motivation, self-control, and communication. However, they could also complicate communication and result in absences.

Table 8. Teaching methods that motivate and kill the motivation. How could ICT be used to support the motivating methods?

Motivating distance teaching	Unmotivating distance teaching
Self-paced lessons	Teacher-led lecturing
Podcasts, discussion boards, videos, images	Independent tasks
Variation in the methods	Unclear notes
Teamwork and reading groups	Lack of interaction
Comprehensive instructions and contact details	Lack of instructions and difficulties to get those
Contacting students personally, evaluation discussions	Overestimating the students' ICT skills
Classes to have more possibilities for communication	Distressing atmosphere in the class
Strict deadlines, making sure that everyone returns exercises	

Even though applying technology innovating way was considered positive in general, sometimes it did not work in practice: "One of our teachers wrote notes with like, so that he had virtual glasses on, and he somehow wrote them [notes] in some game, on the walls of the game and, it was lagging very much, what is it, it showed as a pixel. It was difficult to read them." (S8) When already having difficulties with the topic, challenges like this increased the experienced distress. In turn, sometimes the students wished the teachers would have used more virtual tools available: "But our teachers liked to write notes on paper and send photos of them like on smartphones to the Teams [laughing]. So, then many in our class complained they cannot read them [notes] and the photos were very blurry and, probably just the older people who didn't want to attach anything [files]." (S11) The photos were both unclear and often the wrong way around, which made reading challenging. The students were, with humour presumably, instructed to rotate their computers to be able to read the notes.

Often the classes were implemented so that the teacher was lecturing, and pupils listening. This was experienced to be unpleasant, complicating making notes and focusing on the topic: "I'm a bit like, that I need to focus on the teacher and the lecturing and listening while making notes. But it was pretty bad that, even though someone might have mentioned it, it easily ended up so that the teacher was nothing but talking. I didn't have time to write anything down." (S1) That kind of approach made it hard to maintain self-control: "And in some [classes] the teacher was doing nothing but talking the whole 45 minutes in a Meet-call and that's it. You didn't necessarily learn anything at all because you hadn't been focusing on what the teacher talked about there." (S6) The students had varying experiences of how common teacher-led lecturing was. Therefore, their historical body related to the school where they study can have an impact on this. Moreover, these teaching methods required more self-control and focus skills from the students, which made them react differently based on their historical bodies.

Furthermore, one of the girls had contacted her teacher about classes being excessively heavy. As a result, the teacher had proposed her to take vacation and absence from the class: "I sent a message to the teacher that the classes are terribly heavy and the teacher was like yeah, you can have a bit of kind of holiday. Then I was like well, it's just a couple of absences that yeah, right (I'll take)." (S5) Instead of repetitive, heavy lecturing, the students desired of getting more variation on the teaching methods used: "Sometimes, if you just think at the educational level, [they] could have thought something. No-teacher-led things." (S9) The interaction order in teacher-led lecturing was considered

discouraging. When the students carried out just a passive role of listener, the motivation seemed to be decreasing.

Additionally, the students mentioned other methods that were not extremely popular. For example, when teachers were first talking about the topic and then leaving the students to continue with the assignments by themselves. Some students experienced this kind of arrangement as comfortable, whereas for others it was boring: “But yeah. It was just to do exercises.” (S7) Furthermore, this kind of method required self-control and organisation skills, which were varying among the adolescents.

The unpopular teaching methods often reduced the interaction in the class. For example, sometimes the teachers were giving assignments, and the students were independently working on them (Figure 4). At the other times, the lessons were carried out as not-so-popular teacher-led lecturing. In those cases, attendants were communicating with the teacher using mediational means, such as messaging tools. The teacher was the point through which the communication flowed. They had mediated interactions for example with friends through smartphones.

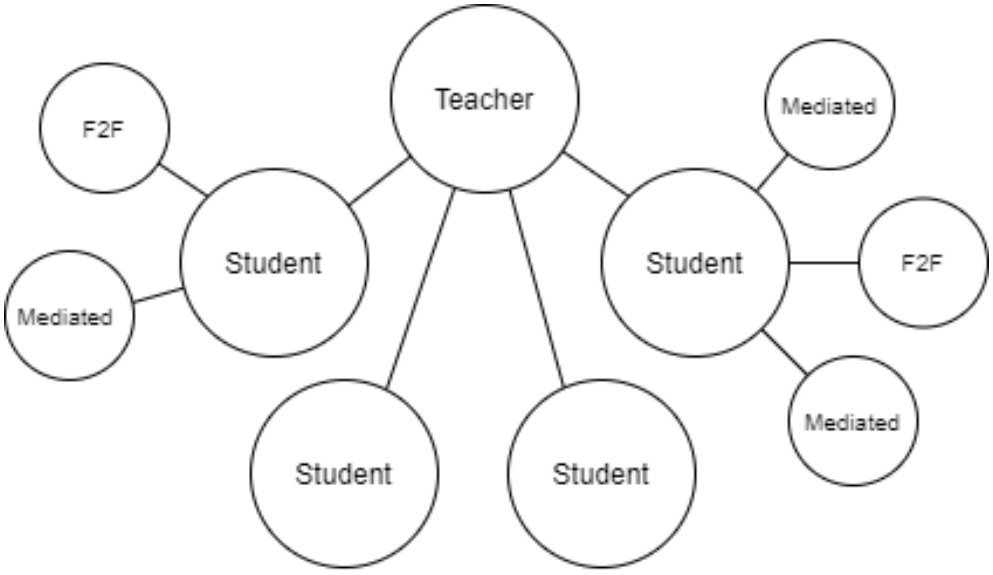

Figure 4. Interaction in teacher led remote teaching classes not using video call software.

Every so often the teachers took the hint from the students’ feedback and applied the ICT in innovative ways. For example, having self-paced lessons, where students were listening to a podcast and discussing it on an online platform: “Some [teachers] took a note of the tip, there was, for example, three, always the same that three classes a week so they might have had one as an independent work so that they just gave a task or philosophy teacher gave a podcast to listen and then we needed to throw a comment on a discussion board.” (S5) Additionally, teachers were trying to bring versatility to the classes in the form of teamwork: “Or we have tried having group work there every now and then and so on.” (S9) This could possibly increase the interaction in the classes, which solves the problems caused by the teacher-led lecturing. Furthermore, reading groups were another form of studies, that increased interaction and altered the role from passive listener to active actor: “There are reading groups so that basically there are groups where we are divided and then, there we discuss everything we have learned and read and so on.” (S3)

In the more popular teaching methods, the interaction happened directly between the students and the teacher, like in group work. The attendants were communicating each-to-each using video calls as mediational means, and they had a face-to-face interaction with family members outside the teaching context (Figure 5). Additionally, they had mediated interactions for example with friends through smartphones.

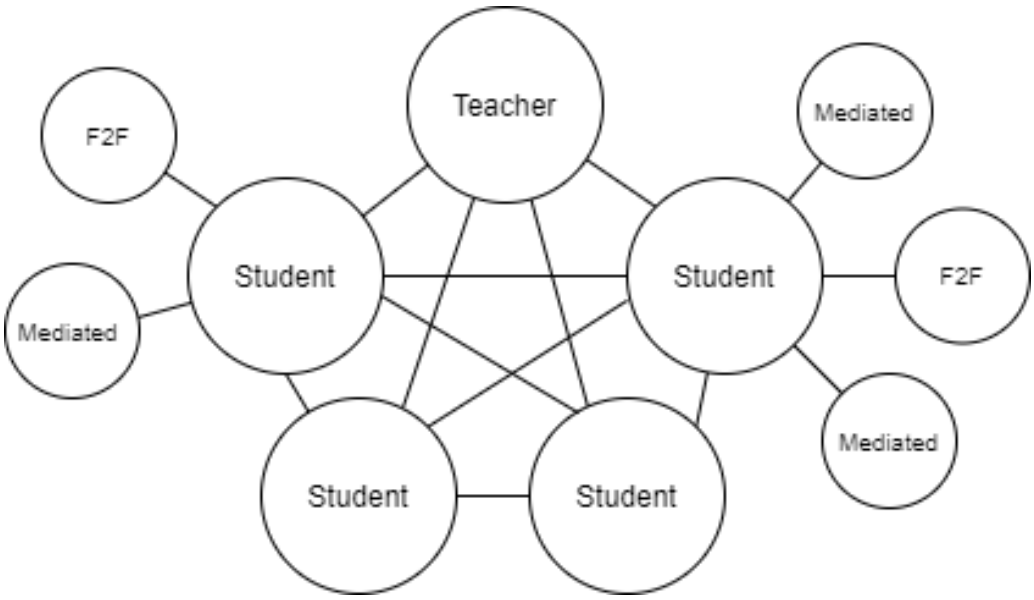

Figure 5. Interaction in distance classes using video call as mediated mean. Popular teaching methods. Figure adapted from Scollon & Scollon (2004).

Furthermore, teaching methods could either facilitate or complicate communication. The threshold to seek help could be lowered by teaching methods or personally contacting students. Teachers were sometimes able to establish a relaxing atmosphere so that the communication felt easy: “An English teacher did it so that first, everyone was there and then he said what we are going to do, and he always asked whether everyone is still following, so that was like, at that point you could always say that you are not following, could you explain again.” (S4) On the contrary, sometimes the teaching methods caused feelings of panic and anxiety: “(-) there are teachers whose classes feel very distressing so that there might suddenly come that, ‘answer to this question now’, which causes panic that what if I cannot.” (S1)

Furthermore, the findings suggest that self-control and focus skills could be also supported by teaching methods. One girl mentioned having a phone always on hand during distance classes. If the topic was uninteresting, the smartphone would be easy to escape. Therefore, the teaching methods could promote getting distracted by technology: “I don’t, well I don’t know, if there is a moment like 'yeah well calculate now the exercises’ so then I, very easily, I’m like ‘yeah okay, and computer away’ and start doing something else there.” (S3) However, when teachers were strict about the deadlines and contacted the students with a low threshold, those problems in self-control could be avoided: “And the teacher has been somehow. Very strict about that all the exercises must be done, which at the upper secondary school, well it's uncommon. They say that 'do these', but then nobody checks if they are done. But the Swedish teacher always checked. Even made phone calls if noticing that exercise is unreturned. It was quite strange. [laugh]. However. I would say I learned more Swedish than before.” (S7) When teenagers have diverse backgrounds and varying levels of self-control, completely independent studying might be hard for some.

Another finding suggested by the data was related to teachers' ICT skills. The students assessed the teachers possessing varying skillsets: “Some of them are like professionals at it, and then there are those who... Especially our language teachers when they are a bit older [laugh] people so then they are always blowing there for a while, that 'how does this work' and 'oh, right', but they also slowly progressed, and then they were really excited when, for example, during the corona, they made a video call to work, so they were like, ‘is this working now, can you see me?’” (S5) The incompetence of the teachers was considered as part of the cause of the problems, but they were nonetheless pardoned and understood: “In a way, also the incompetence of the teachers, that, of course, you can’t assume that they know how to handle these situations, that they are also just human, and it’s challenging for them as well to learn information technology, so that could be like part of the problem.” (S4) Therefore, the skillsets of the teachers as part of the students' historical bodies, might have an impact on how confident the students are with their ICT skills and how capable they are to overcome the problems.

Teachers’ problems with technology were discussed as being caused by novel applications. Teachers had not learned to manage those properly, but many of them were capable to confront the difficulties with an optimistic attitude: “Well, then there are, for example, a couple of teachers who are very bad at using any technology. They always did something there and. [they] Were also laughing themselves that 'oh no, I am so stupid'.” (S7) When the teachers encountered problems, they requested help either from the IT teachers or the students, who had gained vast experience during the distance classes. Despite the challenges, there had been equally beneficial experiences from the teachers' perspective: “Some of them [teachers] have directly admitted that having distance classes has been more comfortable for them.” (S7) Despite the challenges, teachers were receiving praise and understanding: “But yeah, in my opinion, they succeeded quite well, especially when that thing came with such short notice, they did a very good job.” (S5)

5.2.3. Communication

Regarding the data, communication was the cause of many fundamental challenges during distance education: “Yeah, if there had been a bit more communication in the classrooms, it would have perhaps gone a bit better.” (S4) In a traditional school, there were informal discussions with teachers, schoolmates and even random people studying at the same school. Distance teaching decreased those casual, school-related interactions. The lack of communication was considered as one of the main issues, especially between the teacher and the student: “The most challenging has been maybe like, that has been able to contact the teacher. It has been a challenge on its own.” (S4)

Communication in distance education differed from traditional classrooms. Often, the instructions were considered necessary but inadequate. However, for some, the teachers provided proper instructions and help: “Our teacher was able to explain the instructions so well, for example, that how do you download Teams, how do you join, and the teachers had always phone numbers, they had added them there, in every message that I got was that contact if you cannot [do something].” (S11) There could be observed differences in the students' historical bodies because they were studying in diverse schools and attending different courses taught by different teachers. Moreover, the students had varying skillsets when attending to the classrooms, which results in different levels of support needed.

The teachers were primarily controlling the interaction in classes. Students were in the role of listener, but sometimes, when facing technological problems, the students were adapting the role of ICT specialists and helping the teachers to overcome the problems. Every so often the students were causing problems on purpose, like when muting the teacher's microphone: “Then suddenly, voice could disappear somewhere, and someone could mute the teacher so that he [teacher] was muted from everyone, so then someone always called out that your microphone is muted again [laughing]. Then he [teacher] always needed to take it off, ‘who is muting me here again’.” (S5) That changed the interaction order and roles in the class as well by removing the control from the teacher.

One form in which the communication problems came up, were assumptions. Sometimes, the teachers were counting on parents being able to assist the students, which was not always the case: “Some teachers assumed that parents were at home, during the corona, and they could help. But most of them had work to do so you didn’t have parents or anyone at home who could help. And they cannot do any better than yourself.” (S3) Moreover, the students were discussing that the teachers assumed, that they can use ICT because they represent the young, digitally skilled generation: “So, I don’t know if they [teachers] assume that all young people can do, everything. When nowadays everything is somehow. Well, there is technology everywhere so young people have been a bit growing around it.” (S7) In other words, in the class, they represent the role of digitally skilled youths. In practice, the students with varied historical bodies possessed diverse ICT skills, and many of them assessed their skills as insufficient or poor.

The negative feelings related to interaction during distance education were discussed frequently. Interaction order in some classes seemed to increase the threshold to disturb and ask questions. When the students were not physically visible in a class, it was more challenging for the teachers to observe their behaviour and for the students to use non-verbal communication: “In real life, ‘in real life’, terribly good, you get confused, so then the teacher could immediately help.” (S3) Asking questions was considered harder if the other students did not participate either. Every so often, it felt like there were two options. Either asking help and being exposed to the critics of others or completely leaving the question unanswered: “And just that in some [distance classes], if you didn’t understand something, then if you don’t want to ask basically in front of the whole class, so. Then you might necessarily never get an answer to it.” (S6)

Furthermore, the changed interaction order had an impact on getting help during and after the classes: “In my opinion, traditional teaching was much better because there you could, for example, ask questions easier or ask extra questions or the topic, not off the topic but ask something related to what the teacher was talking about, so then, it [distance teaching] was terribly difficult that you kind of needed to post to a chat that 'hey, I would have a question' or then wait for that the teacher would have had a good break where you could be like, quickly open a microphone and 'hey hey teacher teacher' and ask something, but it was much better in traditional teaching.” (S5)

Moreover, sometimes the questions posted to a chat were replied to a lot afterward, which was discussed as being humiliating. Chat was not considered as an ideal place to request help neither, since the chat messages were considered to draw unnecessary attention: “Then there will be like ten [messages] that ‘yes’, so then you cannot send anymore that ‘it wasn't’. Then everybody would be there like ‘okay everyone else said yes but S3 didn’t seem to understand (-).” (S3) Distance teaching provided fewer options for communication. Much of the interaction happened through other means than talking. Even though chats provided an option, the messages were visible for all, which could

cause feelings of being at the centre of attention and therefore being exposed to the critics of others.

In turn, asking for help was not a big thing for all the students: “Basically, you know that you are definitely not the only one thinking about it so when it's explained to everyone at the same time, then it’s pretty good.” (S9) Moreover, two girls discussed paying attention to shy students being able to communicate easier in distance teaching. Some students they had never heard talking in the class before, were taking a more active role. They pondered if the faceless communication lowered the threshold for some students, including themselves: “Maybe you like dared to ask easier. For example, related to some topic. That for example. You haven’t always wanted to gesture in the class and ask that 'hey how this thing goes' so you can. You dared somehow to ask there because your face was not visible and so on. Perhaps, it affected it as well, asking for help.” (S11)

The students’ historical bodies impacted their feelings related to requesting help. For some, distance teaching brought extra pressures into social interaction, whereas for others it facilitated or did not have any impact on it. Less self-confident adolescents might find seeking help humiliating, whereas more confident students find it easier. There could be differences in the class interactions as well and the roles in which the student is in that group. A more secure environment, which consists of the individuals in the class and their roles, facilitates making mistakes and being able to request help.

This shows how differently the students experience similar situations. Whereas some teenagers found it easier to communicate digitally, others experience those situations harder to control. Furthermore, not all the students encountered any difference. In their historical bodies, the experience of seeking help in distance classes could be related to self-confidence, personality, and previous experiences. Moreover, the interaction in the class and the roles of the students, as well as the teachers, could either facilitate it or make it more difficult. It could have an impact on psychological safety, which in turn could make seeking help and initiating communication easier.

5.2.4. Environment

A virtual learning environment introduced many challenges. The discussions revealed that computers, in general, were considered causing extra stress: "In a strange, way it burdens that there is always the computer. Always need to mess with it.” (S7) In some cases, when the topic was difficult itself, the challenges with technology were too much. When the students got left without help and there were deadlines approaching, the motivation started to decrease. The situation was emphasised especially during distance education and exams, where you could not get that easily help from peers or teachers: “And I lost text from there and needed to rewrite text there and sometimes it didn’t write anything and. It was terribly frustrating and distressing that now this exam just goes away soon, and I can’t do this anymore.” (S11)

Most of the students discussed having problems with mathematics applications. They were mentioned as difficult to learn, and the interviews revealed, that not all of them had still learned to use them: “Yeah like, you notice that, for example, if I have done the exercises to the notebook at school. So, and calculated them. Then it has taken much less time, in math. But when you need to do them, on the computer and then. You must send the answers to the teacher that how have you done the formulas, for example. Hence, it took a lot more time because you couldn’t do it by computer. Even though you could have calculated the exercises.” (S6)

Additionally, Teams was another frequently mentioned application related to technical problems. The girls discussed crashing and jamming being related to the peak hours when applications were under heavy use: “Especially when there was a lot of congestion because it was used in such many places so then.” (S12) Even a couple of minutes away from the lesson could cause feelings of being lost: “Even the two minutes that you might have been out of the lesson, you might be completely lost for a while, like what are they talking about now.” (S10) Teams was considered to cause many headaches because of crashing and kicking students out of the virtual lessons. Nevertheless, it was mainly described as easy to use.

The importance of a support network in the class was emphasised during the distance teaching. Many times, the students were unable to join the classes by themselves because of the lagging applications. They needed to contact their friends who could ask the teacher to attach them manually into the virtual class: “Yeah, so it [button to join the class] had disappeared from you so that she could not join there [virtual class] anymore. The course had somehow disappeared from there. Then our teacher needed to attach her to it. Like always. In many classes...” (S11)

The time used when trying to get back to the lessons was considered a waste of time. That could have been spent in more useful ways, rather than fixing the connection: “Well, not after the problem was solved, we continued normally, but of course, it took time, and we may have missed something at the end of the class because IT problems took so much time.” (S5) Sometimes it led to taking absence from the lesson: “Well yeah, just like when Teams might have crashed even three times during a class so then I was like, I cannot do this anymore, I cannot stand it. That let’s take an absence and find out the topic of the lesson independently.” (S4) Depending on the students' historical bodies, they could learn those topics later alone, with friends or family. In turn, if they had less support network or self-management skills, things may have remained unlearned.

Every so often, the technical problems were also teachers' trouble: “Yes, it affects the teaching. That we just needed to cancel history class because there was no voice from the teacher, it just simply wasn't heard. Sometimes the teacher didn’t check the chat, that there were messages that we cannot hear your voice. So, like that.” (S11) Lagging video or voice was common in the virtual lessons. That made following the teaching difficult: “It was very difficult to understand what the teacher was doing, and the image quality could be pretty poor.” (S10) Interaction order in the class changed when people could not communicate, and the teacher's voice was unheard. For example, the students took the role of IT support to get the applications working or tried to desperately communicate the problems to the teachers.

One girl mentioned that there were power outages in her area. When those happened, she had no way to inform the teacher about it: “And then just like, we had many, power outages. For some, at some point and then you couldn’t inform in any way if you run out of battery that ‘yeah hey my battery run out and we have power outage here’.” (S3) Moreover, the discussions revealed reasons behind the connection problems: “At least I had that because we had three people in the same house and in distance teaching, so our internet didn’t always work that well. I don’t know, like for me it was crashing a lot and the whole Teams crashed.” (S10) When analysing the lagging and connection errors in terms of their historical bodies, things like the domicile, number of family members using the internet as well as internet connection quality could be considered. Moreover, the domicile might influence how good internet connection there is provided in the area. In general, those problems were experienced discouraging, and they sometimes led to disengaging from the virtual classroom.

The virtual learning environment was considered also positive (Table 9). ICT was seen as valuable, providing flexibility and diversity in teaching. The value of it was broadly recognised during the COVID-19: “If there weren’t IT, we wouldn't have had the whole distance teaching so it would have been very difficult, that teacher should have sent one-week exercises probably by letter.” (S5) ICT was described as a place expanding the traditional study places and enabling teaching during exceptional times, such as pandemics or school renovation. The computers were thought to deliver extra value to studying in general: “I’d say that. Everything, this technology and information technology, computers, tablets that can be used in studying. They are also a really big benefit. It is a small, compact package that contains a lot of information. There can be saved important. Yeah [laughs]. Important things.” (S7) Technology provided versatility in the class in terms of videos, podcasts, and images, which a couple of girls mentioned as beneficial: “Yeah, I like it that we have, that we use IT in the classes.” (S10)

Table 9. Both benefits and challenges of virtual learning environment

-	+
Difficult to use	Facilitates writing essays
Applications lagging and crashing	A lot of information in a small place
Specific software causing problems (Abitti, mathematics applications)	Motivating
Impacted on the environment such as power outages	Enables distance teaching
Poor internet connection	Support different learning styles
Requires support network in the class	Alternative learning methods
Home noisy environment	Home peaceful environment
Lack of social interaction	

Moreover, technology was seen as providing alternative learning methods: “When people are anyway learning in a variety of ways. Everyone. So, all these methods, technology, or not using technology. So those could be like. Modified to suit everybody’s studying methods. When nowadays they just hand computer for everyone and 'do this, this, this'. So, then it’s a bit. Some people don’t get into their own. How can I explain this? Potential, studying -mode.” (S7) By offering a possibility to do part of the topics independently and returning the exercises afterward instead of traditional learning was discussed as motivating for some students: “If there were in many subjects more like ‘Study these independently and return them and you won’t get an absence’, then it would be like more motivating so that you, learn those things.” (S3)

Although the classes were conducted virtually, the students were studying physically at home. Regarding the interviews, their historical bodies could be seen to have an impact on the experiences related to studying at home. The environment could either be peaceful and safe, or frustrating and noisy. For example, one student discussed a positive side of distance teaching being a tranquil environment: “There has been your own peace. You have been able to concentrate. For many, thereby the motivation has been increasing.” (S7) Other benefits of studying at home were the lack of social pressure when not being able to compare themselves to others. The students had more time to independently solve the issues or request help.

In turn, the peaceful environment was not possible for all, especially for those having younger siblings: “And then of course, when the rest of the family is at home, then younger siblings are playing, and you cannot silence it completely so that’s a bit.” (S4) The additional roles that the students needed to carry out at home were making the studying challenging: “And then, I also had that if my little sister was at home. She is three years old now so she has a lot of energy, and she jumps and swings so, then it’s very hard there to focus on the school when basically you should also be with the little sister, if you don't say that 'don't come here, I'm on the phone with friends', so.” (S3)

The school represents not only the classes but also the time between them. Distance teaching was mentioned as not being suitable for all. Discourses revealed feelings of loneliness: “Kind of being completely, kind of alone so that was pretty, big deal.” (S10) The lack of social contacts was named to be a reason for decreasing motivation and making the distance school feel heavy. The breaks during the lessons were typically spent, for example, at the school cafe, which provided opportunities for social interaction. The shared moments with friends were something that was missing in distance classes: “Well, first of all, I would like to see all the peers so much, that of course during the summer holiday you have been able to see them, but it’s not the same thing when you go to school and are every day with the same people and you can spend breaks with them and just laugh.” (S5)

Working in a student union was mentioned as bringing joy to daily life. Furthermore, friends were acting as a motivating factor, as of peer support, where everyone is on the same boat: “Yeah well, of course, it's also the case that when there are friends and so on, there is no need to be alone at home, so that's also kind of motivating, that there are others there, close by and in the identical situation.” (S9) Moreover, studying physically among other people was considered to make learning easier: “However, somehow the peers and everything helps with learning, and you can always ask for help from them. Now everything would be using phones and computers, so it, well, makes it much more difficult.” (S2) The moments between the classes decreased the stress levels through shared laughs. Therefore, those students who were more social could suffer the lack of social environment more compared to those who require less social interaction.

5.2.5. Wellbeing

The discussions suggest that distance education and technology introduced both positive and negative impacts on wellbeing. For example, during the traditional school day, there was utility exercise when commuting or spending time between the lectures. The lack of this kind of exercise was causing numbness: “Of course, when you need to sit down for so long on the screen, you started to feel a bit numb. There wasn’t like utility exercise at all.” (S5) In turn, possibility to sleep longer was discussed often as a beneficial side of distance education: “Morning wake-ups were not that bad [laugh].” (S11) According to the data, the students experienced both physical and mental outcomes on wellbeing. Some of those were caused by distance education, whereas others by technology in general.

The findings revealed that staring at the screen caused many symptoms, including fatigue, a headache, the strain of eyes, and insomnia: “Yeah, I think it’s, in my opinion, much more demanding and harder, the distance studying, especially when you couldn't do the exercises with friends and free periods, in general, were spent by sleeping when you necessarily [laugh] hadn't slept the night before because you had been staring at the screen for so long the day before. Then you had to drag yourself to jogging because you didn't have anything, (-), but kind of the routine was pretty much missing from the rest of the

life.” (S5) The strain for the eyes was considered surprisingly burdensome when needing to spend the whole day in front of the computer: “It was surprisingly hard when you were sitting always eight hours in front of the screen during the day and there were not many breaks, there were break times [between the classes] always or then free periods, but it burdened eyes quite a lot.” (S5) Moreover, a headache and a migraine were mentioned as well: “Then, like, perhaps sometimes I've had a headache when it hasn't been, you've needed to be the headphones on and stare at the screen.” (S9) One girl mentioned computers causing her migraine, which was already stressful when planning matriculation examinations.

Physical effects had an impact on the mental side as well. The feeling of exhaustion was discussed decreasing during distance education. The possibility to sleep longer, time saved in traveling, and peaceful environment were mentioned as reasons for decreased exhaustion and improved mental wellbeing: “Many have said they've been very energetic when they've been able to sleep, and there hasn’t been kind of. When the school is anyway quite. Or your school building is quite big and there are an awful lot of people and a lot of fuzz and noise and so on. Kind of the mental health has been somehow kind of improving. At least by myself, I realised I wasn’t that exhausted anymore. That even though we were kind of at school and you needed to be focused for a long time you realised you still had a lot of energy.” (S10) When considering the historical body related to the environment and wellbeing, school comes up. The students were studying in diverse schools, so the school environment might be noisier in some places than in others. Moreover, home as a study place might be noisy for some whereas peaceful for others, depending, for example, on the family size and students’ additional roles. Furthermore, some students might feel exhausted when being among other people for a long time, whereas others get energy from it.

However, crisis-prompted distance education also increased stress levels and made it difficult to draw a line between school and leisure time: “When you kind of do schoolwork at home, so you feel like you have no leisure time at all. That you do, from eight to four you are at school and after that, you do homework for two hours and then it’s almost time to go to bed and wake up again in the morning, so maybe it feels like you have no leisure time.” (S8) Spending the whole day on the computer and at home was described as grim, and it caused conflicts with the parents and lowered the mood: “Like when you are inside four walls all day, so I have talked with many others that there have been more arguments with parents or that, yeah it has a negative impact on the mind.” (S10) In terms of nexus analysis, arguments with parents could be related to students' age and family roles, as well as the interaction between the family members.

Additionally, virtual classrooms made self-control and focusing more challenging: “Well yeah, probably kind of a bit the difficulty to concentrate. For many friends and me, there has been so that the lesson is set to run in the background while doing everything else because you can’t sit in front of the computer with such a short break in between.” (S9) The interaction changed in the class, which provided the students more control over their actions because they were not physically visible to each other or the teacher. When there are other people and the teacher physically present, the threshold to disengage could be higher because of social pressure.

Furthermore, a variety of negative emotions were arising caused by distance teaching and technology (Figure 5). For example, annoyance, anxiety, stress, panic, frustration, and helplessness came up in several discussions. Often-mentioned causes for those were teaching methods, exams, and problems with technology in general. Moreover, the fear of being laughed at was considered higher in distance classes.

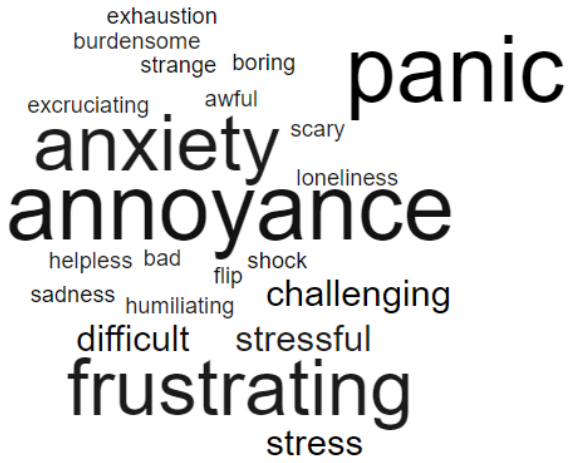

Figure 5. Negative feelings related to distance education and challenges with ICT. Words emphasised based on the incidence in the material, so that the words coming up the most are larger.

Crashing applications caused a variety of negative emotions, like panic and being unable to keep up with the teaching: “Maybe a bit like a distressing feeling, when you didn’t know what happened and what should you do now, so a slight feeling of panic.” (S4) When crashing happened repeatedly, and it was impossible to use the applications, feelings of annoyance, helplessness, and frustration were coming up. Mathematics applications were discussed as the most frustrating and challenging. The feeling of helplessness was mentioned frequently, often related to limited communication. Sometimes it was caused by being ashamed of seeking advice, other times the help was not received even though asked.

Frustration and feelings of giving up were involved in those situations, after trying repeatedly, but not managing to do something: “Especially if you are trying multiple times and then it just all the time, the calculator like. So, if you enter a calculation there many times and then it doesn’t kind of give the answer or there is some kind of ‘error’ so then it feels frustrating. And you start feeling helpless.” (S10) Historical bodies and interaction order were both identifiable when considering the causes of negative feelings. When the applications were crashing, the historical body related to ICT was identifiable. It makes a difference, how good ICT skills they have, or do they have someone capable to assist them at home. If not, feelings of helplessness or giving up might rise.

Not knowing how to use an application, even though most of the students did, caused feelings of panic: “There was a slight panic [laughing] because many, however, knew how to use them. When I couldn’t, it was a bit like ‘oh god, what do I do’.” (S2) Asking help was considered embarrassing because of feeling that the things should be already familiar: "A little bit scary in a way, so that you didn't dare to ask for help. There was that kind of feeling, that these should be already familiar. So, you didn't dare to ask the teacher that hey what should I do.” (S4) Less confident teenagers described there being a threshold in asking help and disturbing the lesson, as well as asking help in front of the other students. Additionally, every so often the message was discovered belatedly, which was experienced as humiliating.

Despite the challenges, things were getting steadier over time, at least for some of them. The feelings of shock and helplessness changed to boringness, routines, and feelings of easiness. Nevertheless, some challenges persist: “Well, I don’t know if I ever learned [laughing] those mathematics applications like, that well.” (S5) A couple of girls mentioned the importance of maintaining mental wellbeing both during the traditional classes and distance classes: “But if it [distance teaching] continues, then you'll have to make sure that your own wellbeing remains good. Because it easily just gets so that when school is kind of at home, there is no leisure time, it feels like that.” (S8) Allowing oneself compassion and not trying to be perfect in each subject frees up energy to focus on the primary subjects: “In upper secondary school, it’s really so that you can kind of think that in which [subjects] you are investing in, so in my opinion, it's really important to understand that you don’t overload yourself so that you are trying to get a full score at everything. Probably, that you always do your homework takes you really far.” (S10)

5.2.6. Examinations

Another theme that was frequently present in the discussions, was exams. The exams, and especially the matriculation examination, were causing anxiety, probably because of their increased importance for postgraduate studies. Exams were considered difficult both during distance teaching and traditional classes. The difference between those was that in traditional classes, it was easier to receive assistance for technical problems. Often, the technology was considered causing more struggle than being a valuable tool, because getting the answers into the examination platform took hours and caused irritation. Moreover, sometimes exams were long and required a lot of manual work with computers, even though the assignments were managed: “So it was a bit heavy, and especially in the exam. In the math exam, you have eight assignments, a lot to calculate. So, you had to attach screenshots all the time.” (S12)

One often-discussed reason for the problems in exams was the Abitti platform: “In exam situations, we have been using those, what is it, Abitti. Because for me it hasn’t been taught in any way to use those, so I have had problems with them.” (S2) The platform was still unfamiliar for the second-year students, and they had not received enough instructions to manage it. In turn, the third graders found Abitti as easy to use. That could be due to their historical bodies, which had gained more experience of using it. Deficient skills on the applications used caused additional stress: “Then I couldn't find the multiplier from the computer so there has been kind of like, now I'm running out of time and this [exam] depends on not finding the multiplier.” (S1) Sometimes it led to being unable to complete the exam on time: “For example, in an exam, it was so that, it took so long to figure out how it [application] works, that then one task was left undone. Not more, but it was still a bit annoying.” (S8) Although the girls managed the assignments, the struggle with technology caused headaches.

The findings revealed, that although the applications were familiar, technical problems were causing anxiety in the exams: “We needed to go by ourselves, to the internet and from there, also I had in exams. Exams just. They just like lagged that I couldn’t do those tasks and I needed to call to the teacher that 'hey, I can’t do this exam’, that ‘internet is not working' and everything.“ (S11) Every so often, the texts written were disappearing during the exams, and when the girls were trying to rewrite them, it was prevented by the platform: “And the text was disappearing from me and needed to be written again and sometimes it didn’t write anything. It was very frustrating and distressing that now this exam is left here, and I cannot do this anymore.” (S11) It led to feelings of frustration and giving up. Some aspects in their historical bodies, like the quality of internet connection

or the number of other internet users at their homes, could be related to lagging connections.

In a traditional class, there were other people around. That, in terms of interaction order, might cause stress when comparing themselves to others. For some students, the home exams were easier because of the decreased social pressure. In turn, the lack of other people around could mean the lack of technical support: “When the exams have been online, so there have been, of course with information technology there are always some problems that it doesn't always go as it should. There have been such problems, and when there hasn't been, dad has been at work so you couldn't ask for help, and then again you were lagging behind when you didn't get the help on the instant.” (S4) Additionally, some of them mentioned, that nobody in their family can do better than themselves. Therefore, their historical bodies in the family background have an impact on their exam success. Seeking help was perceived harder in distance exams, whereas in traditional exams there were always people nearby. At home, the technical support was parents or friends through mediational means. When considering their diverse historical bodies, they were placed in an unequal position. Things that provided benefit in distance exams were, for example, their parents’ skills, profession, or availability as well as the historical body in ICT.

To prevent cheating in exams, the teachers had developed different tactics: “Some teachers at least tried. Somehow reduce the possibility to cheat. Which was anyway really good.” (S11) Those solutions included restricting the exam time, making questions that were perceived too difficult, using plagiarism software, and tightening up the assessment. That was part of the reason for the increased stress: “It was so stressful to do those exams when you knew you have less time.” (S10) The time restrictions were causing headaches for the students, who needed more time to complete the exams.

Not surprisingly, matriculation examination came up in several interviews. It was already evoking stressful feelings in both, first and second graders: “[It] frighten me how it [matriculation examination] goes.” (S2) This was primarily because the matriculation examination, which is traditionally in the third year of studies, has a considerable impact on the possibilities in postgraduate studies. Furthermore, base knowledge accumulated in distance teaching was evaluated as being insufficient. In addition, one girl mentioned suffering from migraines. The matriculation examination is nowadays done fully using computers, which again caused headaches for her and therefore created additional stress into the exam situation.

Refresher courses were considered to be extremely important for succeeding in the matriculation examination. Therefore, the possibility that those need to be done remotely caused already negative feelings: “After all, it’s pretty awful to take some final courses and refresh courses online.” (S1) The responsibility of learning was considered higher in distance courses. The interaction in many distance classrooms changed so that the students' role required more self-control and independence. That caused stress because not all the students felt being ready for such a responsibility: “Starting to think already about what [subjects] to take the final exam and where to invest so it would be really, really difficult, though. Handling many courses kind of independently. Or at least that’s how I feel like, I would handle [laughs] those completely alone. It would be a very, very scary idea, that you have to handle so many courses independently.” (S10)

Moreover, the distance courses were making asking for help more challenging, therefore the refresher courses were hoped to be in traditional classrooms: “And then prep courses, hopefully, those are at [traditional] school. At [traditional] school it’s however so much easier to ask for help. And learn and such.” (S12) Handling independently the

fundamental courses before the matriculation exam was described to be burdensome: “Probably, during the senior year, if it continued, it would burden you much more because there are anyway so many, important courses where you should be. Listen and such. Not necessarily many courses, but important courses. You know they would be beneficial in, like matriculation examination.” (S9) Regarding the discussions, the students acknowledged their lack of self-control and its effect on the examination: “It is not, like, funny anymore, for those, who cannot quite. Follow the distance education, so it might be very hard if you must study independently during the summer, and you don't have the energy for that, and then you'd get back to [traditional] school, but if you didn't, it might be that the studying might be left. That there is none [studying in matriculation examination] [laughs].” (S9)

Two girls discussed the matriculation examinations of last spring that had been held earlier than first was planned, due to the COVID-19. Because of the changed schedule, also, the grade scale had been lowered. If the situation recurs and the exams will be held earlier also next time, the girls mentioned the game to be lost: “You would like to. Invest in those subjects, and then they are consecutively a couple of weeks beforehand, so I guess it’s then a lost cause.” (S11) To prevent the early scheduling, they discussed the possibility of having the examination remotely, but discarded it because controlling cheating was seen as impossible: “Well, then kind of, it would feel like everybody’s now cheating here. Although there is surely always someone who is searching for help as much as possible. That probably the matriculation exam results wouldn’t be that honest perhaps. But I feel like they could never do that [remote matriculation examination].” (S11)

5.3. Coping strategies: Brief COPE

The switch from traditional school to distance teaching happened unexpectedly, which could be seen as a stressful situation that needs adapting. Distance teaching and increased usage of ICT caused stress, panic, and other negative emotions for the students. All of them mentioned at least some situations, where they had faced challenges. Next, the coping strategies adopted by the girls are categorised by applying the Brief COPE scale by Carver (1997). The use of the said strategies is further analysed by applying the concepts of nexus analysis.

5.3.1. Emotion-focused coping

Emotion-focused coping consisted of five items, which were *positive reframing, acceptance, humour, religion* and u*sing emotional support*. About emotional-focused coping, all other strategies were analysed to be adopted except humour and religion. Religion might be too personal to come up with when discussing school-related coping in a public place, and humour was difficult to analyse from their discussions, even though many of them used humour in conversations. Moreover, it might be, that those were not considered as coping strategies, even though they were utilised in practice.

Positive reframing

More than half of the girls were analysed using positive reframing as their coping strategy. Positive reframing consisted of two subitems, which were related to seeing the stressor in a more positive light and looking for something good in what is happening. The students tried to adapt to the fact that distance teaching might continue in the autumn, as discussed

before. Many of them tried seeing the stressors, both distance education and challenges with the ICT in a different light, to make them seem more positive. Distance teaching, in general, was considered more burdening than traditional teaching. However, almost all the students could find some good sides of it: “Well, at least that there is no need to go to school or move to the school in the morning. But, well, some subjects can be, pretty nice, for example when somebody has sports class so rather you do those sports classes at home so that you go jogging than being at the school sports class. At least I would rather be. I can't come up with many other things, that rather I would be in normal contact teaching.” (S8)

Discussions revealed also other good sides from the distance teaching in addition to the ability to sleep longer and do sports independently, such as learning new skills: “Fortunately, there was also something good brought from the corona, that for example, for next year I have quite many distance classes, distance courses, so I have learned even a bit to use those Teams’ and such that not everything is new then.” (S2) Distance education was seen in a positive light when it was considered helping to acquire skills, that would not have been acquired otherwise. Moreover, the skills obtained were not only related to technology, but some students also had experienced personal growth: “After all, you learn IT skills. You learn a lot of initiative. Kind of that you learn to take responsibility from your own studying so that’s what you learn in it [distance teaching] and. It is such a good side what you discovered by yourself a bit. Or that you understood how much really is needed to take responsibility.” (S10)

When considering their historical bodies having an impact on using positive reframing, some of the girls mentioned that ICT is not rocket science, and that experience had shown them that it is possible to get over those problems. Positive attitude towards ICT was discussed to be helping in overcoming the problems: “Then, maybe a positive attitude to those [technology] that it is not any, like, rocket science these that anyone will be fine and at least there was. When upper secondary studies started, we had this IT course, and there, right in the beginning, we learned to use everything.” (S9) Two students discussed, that at the end, you just need to remember which button to click: “Then when you have really got used to using those applications, then they are really not, they haven’t been any rocket science that you really, would need anything in English, something difficult. It is really just you remember which button to click and such.” (S11) Remembering that not knowing something is not the end of the world, and avoiding panicking was mentioned as useful strategies.

Moreover, forgiving yourself not to learn everything at once, but investing time for learning more challenging things could be considered as seen things in a positive light: “Maybe just like it’s not, as the end of the world if you don’t get it right away. That, there are people close by who can help. And it has never been, for me, more than a couple of clicks away from being able to do it. That if you just bother doing work so that you learn it. That like really, even if you bother asking for help. So those have been always learned. Don’t panic that I’ll never learn this because I thought [laughs] a bit in the first grade, that I’ll never learn this and such. But yeah.” (S11)

Every so often the attitude was seen in practice so that stressors were tried to put into lower importance: “There will be the first matriculation exams. So, it scares a bit like beforehand, that you should sit six hours in front of the computer. Hopefully, there will be no headache or anything. But that’s one headache.” (S7) Therefore, the prior experiences of being able to overcome the problems can influence which coping strategy to use or how positively the stressors can be faced. A couple of girls also discussed themselves being the kind of personalities, that they keep trying, which could be related

to personal characteristics. To be able to keep trying could indicate positive reframing. Seeing new skills gathered being positive for future studies, indicates future goals.

Acceptance

Another emotion-focused coping strategy, acceptance, was also identifiable in the discussions. Acceptance consisted of two subitems, which were accepting the reality of the fact that something has happened and learning to live with it. It was observable in the girls' answers when they discussed they needed to learn to live with the unfamiliar situation: “Yeah, first it felt very different and like, how can I ever get used to this but. However, it was got used to pretty quickly. And, then it didn’t feel that difficult anymore.” (S12) A recurring theme in many interviews was the view that life must go on, despite the stressors: “Yeah, it has got a bit more difficult when you need to do so much by yourself and need to decide yourself that what assignments you are going to do and when you don’t get enough like (instructions). Yeah it [studying] has got a bit more difficult but it has been survived.” (S2) In terms of the historical body, acceptance could be related to better ICT skills and personality. The situation could be analysed to be easier to accept if the skills needed in order to keep up with the studying were sufficient.

Moreover, many girls brought up the importance of an attitude when coping with challenges, and some of them mentioned having that attitude by themselves as well. As distance education required more self-management skills, the attitude was considered helping to keep trying in order to learn to manage the applications. Sometimes learning to use the applications caused stress, but it was got over by routines: “Well, at first it felt like oh no, help, really, that there are a crazy lot of these [applications] that I will never learn to use those all but then, quite fast, came kind of routine that it was needed to use them all the time, you had to learn to use those, then it became easier.” (S5) The students mentioned balancing the increased screen time by, for example, going jogging after school or reading books. That could also indicate accepting the situation and adapting new habits to be able to overcome it.

Using emotional support

The findings suggest that emotional support was used as well to combat school-related stress. Emotional support consisted of items that emphasised getting emotional support from others and getting comfort and understanding from someone. Emotional support was received through mediational means such as phones, or before COVID-19 actions, physically at the school. The friends were directly mentioned acting as support both before and during exceptional times: “Well, it was good that got support from friends so that you knew so many others are going through the same things now. So, from them got a lot of support for it and help.” (S10) Peers were often considered bringing emotional support by being present and making the interviewees understand, that they are not solely the ones not keeping up with the teaching: “Mostly friends, like when you have been kind of calling them so they have had similar problems so then you have been like phew, I'm not the only one who cannot do it. Kind of group stupidity has been a pretty comforting thing. [laugh]” (S4)

One student reflected relying even too much on other people’s support, which made it difficult to work alone: “I quite much rely on the help of the teacher and friends. That I’m sometimes having difficulties doing things alone.” (S10) Using emotional support could

be related to the resources available when considering students' historical bodies. They all mentioned having friends, and many of them discussed relying on emotional support. Friends were considered as the first source of emotional support, probably because of the nature of the relationship and role between the adolescents. A trust might be higher with people they know better, which therefore lessens the fear of asking silly questions or losing face. Therefore, a support network is an important factor explaining the use of this strategy.

Not only friends but also teachers and study supervisors were mentioned as a source of emotional support, so the school can be part of the historical body affecting this. They were mentioned providing emotional support by sending messages and asking if everything is going well. Sometimes comforting words were enough to relieve the stress: “I have been moaning to the teacher that what if I’ll never learn these. That you must click eight different buttons, eight different buttons in a sequence there, then remember you need to click other eight buttons somewhere else, like. What if I won’t remember all of these. So then, they have been like ‘well, it will be fine’.” (S11)

Moreover, teaching methods could support getting emotional support through interaction in the classroom: “And there as well you basically got the interaction with others so that you got to know how the others were doing, like the studies and such so that then understands that. You are not alone if you haven't learned something.” (S3) Searching for emotional support seemed to be easier for some. Additionally, the personal characters and historical bodies of those other people around could have an impact on it. Interaction order could make a big difference here. For example, some teachers were easier to approach when seeking support than others.

5.3.2. Problem-focused coping

Problem-focused coping consisted of three strategies, which were active coping, planning, and using instrumental support. The findings suggest that problem-focused coping methods were the most commonly used. Especially using instrumental support, which was mentioned by all the interviewees. Additionally, active coping was discussed a lot as well, and planning came up as well.

Planning

Planning consisted of two subitems, which were trying to come up with a strategy about what to do as well as thinking hard about what steps to take. This was utilised in varying degrees among the students. Some of them were more organised by nature, which indicated the use of this strategy. As discussed before, one girl described herself as organised, sometimes even too much. She discussed having always a calendar with her, which could indicate planning being one of her coping strategies.

Moreover, many students were already planning how to manage the matriculation examination: “I have been thinking like, quite a lot, that how do you manage it there [matriculation exam]. And what if there will come up an information technology-related problem, that who is going to give help then and if you don’t get it [help] so what do you do then” (S4) Uncertain situations in the future, such as matriculation examination or distance teaching continuing were making some students use planning. That could be

perhaps in order to get prepared for the future or being able to reach the goals set. With planning, there were rarely mentioned, other people. The situations needing planning were often those where they needed to be alone. Therefore, it could be related to feelings of needing to handle something independently and controlling uncertain situations.

Negative experiences in their historical bodies could increase the use of planning. Sometimes when asking for technical support from the teachers, they had just instructed the students to search from Google. That caused extra stress and led to avoiding the courses of that teacher: “Yeah. And you were checking that, perhaps I won't take that teachers' classes in the future if it's not absolutely necessary. Rather I would go to that one who really, who cares to help and is ready to help.” (S12) Therefore, using Instrumental Support unsuccessfully led planning to get instrumental support successfully in the future.

Moreover, based on their experiences, always remembering to take a laptop charger to school and having nerve-chocolate to support coping were mentioned: “I have always had snacks with me on distance classes so having some nerve-soothing chocolate there with you.” (S3) One girl discussed making notes when doing assignments or exams. That could be considered as planning since sometimes the notes had been helpful when the exam application had been crashing: “If it has been like I have fully just deleted or forgotten to save it so then I have needed to start writing from scratch [laugh]. Luckily, I am doing quite a lot on paper so that I design those somehow on paper, then write on the computer everything, so that has been quite helpful that I always have the paper version there. I have been able to rewrite it quicker so that I didn't need to start totally from scratch.” (S2) Previous experiences in their historical bodies that led to bad outcomes, such as not getting help or losing progress during the exam were leading to using planning.

Active coping

Active coping was used in ICT-related problems at both traditional school and distance classes. It consisted of two items, which were concentrating efforts on doing something about the situation they are at and taking actions to try to make the situation better. Because of COVID-19, everything changed over a weekend, which required learning new skills to keep up with the teaching. Many students mentioned taking actions to be able to keep up with the studying: “But yeah, it kind of changed, so that everything was needed to. Learn everything kind of again there at the computer and kind of quickly find out new ways of studying, so that can use [applications].” (S1)

The students' capabilities to actively search for ways to overcome the challenges were varying, depending on their historical bodies. Some students mentioned being perseverant or organised, which could make it easier to keep up with the routines and use active coping. Using active coping was seen to be related to for example self-confidence: “Yeah, of course, it affects that there is kind of self-confidence that yes I can do it.” (S1) Some students mentioned that they kept trying independently until they succeeded: “Yeah, I suppose, well, it must have been learned independently if nobody's been able to help.” (S2) In turn, some of them mentioned giving up easily or going over where the fence is the lowest, which could indicate using less active coping and more, for example, behavioural disengagement.

Developing self-control was discussed as an essential strategy to cope with distance education: “It had to be learned to only listen during the class and then after the class

write everything down. At least I could not take notes at the same time. In that sense, it was needed to develop again and try to remember and develop a sort of remembering and such. So those I probably used. Probably also, that during exams you tried not to use the book. Even though of course that was [laughs] done because, you kind of couldn't, you couldn't resist the temptation. But somehow it was needed to sharpen so that it had to be done for yourself, the studying. And that nobody's telling off. That it needs to be tested that can you really focus. Kind of just being strict with your own studying." (S1) Some students were more capable of this than others, which could be analysed to be related to their historical bodies. Not all students had the energy to force themselves to maintain self-control.

Moreover, the historical body in terms of future goals was mentioned to promote using active coping: "Help, that these applications really have to be used in mathematics classes and exams and everywhere, so it just had to start getting interesting." (S5) Although the students had no intrinsic motivation towards ICT, the reality that they will not pass exams without it increased the usage of active coping: " It's like when you know that now I just need to learn this. That I won't pass the exam if I don't go to Abitti, so then you just must learn. With that one can probably get, at least I can get quite far, by just thinking that." (S1)

Furthermore, an initiative was mentioned useful factor promoting active coping: "Well, so that you dare to ask for help. Kind of initiative, either asks for help or then searches online. Google that what to do if this happens or such." (S7) Controlling the emotions and just keeping on trying was considered important: "And, probably so that calmly trying to think that what is it in here and try to search from the application somewhere. Often in those applications, there is like a helper-thing where you can see like, or you can write there that what's wrong, so often there will be a solution." (S10)

Moreover, the students discussed concrete actions, such as walking in the class to find Wi-Fi, changing their computer because their own did not work, changing a study place to get a more peaceful environment, or going out for jogging in order to stand the stress. Many actions were carried out using ICT, such as playing with the unfamiliar application by clicking buttons and seeing what happens: "If it's new software, then you start to click different buttons and see that how the software works and what happens from where." (S2) If the use of application had been gone through earlier in the class, it could be recalled: "Maybe I have tried somehow to go through the calculator, that is there something familiar. If I could remember that we have done this at the class or something. But if not, then I have like, I have tried to plan it on paper or, go through the calculator somehow." (S9) Other ICT-related strategies to overcome technical problems included rebooting the application or computer and trying to log in and log out repeatedly. The students who were confident with technology discussed using these strategies more often compared to less confident ones.

Googling and using search engines were mentioned by almost all the students as being an efficient tool for trying to independently overcome problems: "Google is pretty good [laughs] tool, that there then." (S5) Changing the search queries instead of giving up was discussed providing results at the end: "And it's not anyhow terribly difficult to find, that if you don't find it on the first time, then change the search query a bit, so for sure you'll find it from there [search engine]." (S12) Moreover, online videos were discussed as useful: "Even though it sounds funny, YouTube videos help really a lot. At least they

helped me in the beginning when they are talking and doing at the same time so you see that what you should do and where to click, so those have been pretty good, at least for myself." (S4) Getting both voice instructions and visual presentation facilitated the understanding. Some students considered their historical body as a benefit here. They were fluent in English, which provided them with many more search results compared to those using only Finnish articles.

The students were not only trying to alter their own behaviour to overcome the challenges, but they had also contacted teachers and demanded change in order to improve the situation: "But yes. They [teachers] have been told that, send more instructions and better instructions." (S7) Repeatedly, the teachers were contacted due to the lack of instructions or teaching methods which decreased motivation. Unfortunately, the feedback did not always lead to the expected result. For example, sometimes, instead of modifying the structure of the lectures, the teachers instructed the students to take an absence.

Instrumental support

Using instrumental support was the most frequently mentioned coping strategy. It consisted of two subitems; trying to get advice or help from other people about what to do as well as getting help and advice from other people. It was discussed by all the students, even though the experience of it varied. Students discussed using instrumental support for example if active coping did not work out: "Yeah, you try five years to fumble, and then dad clicks one button like [laughing] now it works." (S11) As discussed before, family members, school personnel, and friends were primarily providing instrumental support. In addition to the primary sources of instrumental support, there were also other people from whom to get support (Figure 6). The importance of historical body was evident: "And anyway, there are people from who to ask for help if needed." (S8) Using instrumental support required having people around you who were able to assist.

Figure 6. From whom to ask help from when facing problems related to ICT. Words emphasised based on how often they came up during the interviews.

The findings reveal the place in which the problem was encountered impacted on from whom to request help. For example, at home, the primary source of instrumental support for many was dad, secondary friends or teacher, and tertiary uncles. In turn, at the traditional school, the primary sources of help were teachers and friends and secondary

siblings: “It depends. Sometimes you can ask for help, at school from a friend but if a friend doesn’t know, then you can easily send a message, for example, to a sibling or something that 'how does that go'.” (S8) Especially during distance teaching dad was mentioned being essential support: “That we have the dad who is the one, who knows. And luckily we had dad [during distance teaching].” (S11) Additionally, uncles, mom, siblings, and parents, in general, were mentioned of helping with technical dilemmas. In practice, the help was discussed being, for example, fixing the problem right away, or supporting the problem solving by considering it together.

Friends were often mentioned as the first source of help to keep up with teaching: “At least ask a friend there that 'yeah how did you place that there’, that ‘I want to keep up [with teaching]’ so that you won't certainly be left behind.” (S12) The threshold to request support was lower when asking friends compared to for example teachers. Moreover, contacting friends was useful especially when the computer was uncooperative, and the teacher could not be reached through it. One girl mentioned the boyfriend to be huge support with the issues related to ICT and learning to use it efficiently: “He has been showing to me, from the computer, such things that I had no idea. That, for example, when you click certain buttons, then happens this and that, which has been Utopian for me, I’ve been just looking at like what on earth.” (S7) Friends from who to ask help were those, who were also assisting others and therefore considered being competent.

Teachers and school personnel were also mentioned by all the interviewees as a source of help with problems related to ICT: “Well, teachers usually know. And if they don’t know, they can also find out from someone, we have IT support at school.” (S9) The findings suggest that sometimes the teachers' help was considered unsuccessful. Although the support was received, the students hoped that it would have included instructions on how to fix similar problems in the future in order to reduce the need for instrumental support: “And then the computer science teacher came and fixed it, he didn't even tell or show that what should be done but just took the computer, did something for it and gave it back. A bit like, perhaps it's wrong to say that they were bad teachers in that situation, but kind of they were.” (S4)

At home, the students described the support as different, and family was mentioned as one of the primary sources of instrumental support. Their fathers were able to demonstrate to them how they fixed the issues, which provided the students with more tools for the future. The interaction order might be crucial here. The family members could have more motivation to spend time teaching the solution because it benefits the people they care about. In turn, the teachers might be under heavy workloads, so they just want to fix the issues quickly. Typically, fathers were discussed as being significant support with ICT-related problems. However, the situation varied based on their historical bodies. For example, every so often the parents were too busy to help. Moreover, not all the students had anyone at home capable to help, as discussed before related to their historical bodies.

Furthermore, the altered interaction order had impact on whether to use instrumental support or, for example, behavioural disengagement. There were indications, that communication was different through mediational means, such as computers compared to face-to-face communication. In distance classes, help from friends and teachers was got through mediational means, such as smartphones, or applications like Wilma and Teams. Help received from parents was either face-to-face or through mediational means. Moreover, the less confident girls discussed there being a threshold to seek help, especially in distance teaching. When they experienced asking help embarrassing as is,

the chat visible for everyone was making seeking help even harder. In terms of the historical body, self-confidence could have an impact on using instrumental support. When the teacher asked whether the topic was clear for all, and the chat was full of positive replies, it was unpleasant to be the only one answering negatively. This might, at least for less confident girls, lead to apply for example behavioural disengagement instead of instrumental support.

However, the findings revealed the experiences were varying. When there was the possibility to ask questions without being physically visible to others, it was considered activating some students: “But I feel like, when there are always those shy people in classes as well, who don’t dare to ask. That, kind of when you have been with them in the same classes, and you have never heard their voice. So then, they ask really there, in online teaching. Because you can’t see faces there always. So, they ask there that 'hey, how does this go'.” (S11) Many confident girls discussed that even though they were comfortable with requesting help, they knew many people were not: “But then it might be that someone might not dare to ask. Or such. But I’m always kind of that, if something goes, then I’m like immediately that 'help, now, here' [laughs]. Like that.” (S11) The more confident students mentioned that not knowing how to do something is normal because applications are complex: “That it’s not anyhow abnormal if you can’t use [computers] because there are many challenging things.” (S1)

All the students discussed requesting advice from others, sometimes successfully whereas not always. Even though the teachers were considered competent, help was not got as much as needed because of the group sizes: “Then, there is this problem, that when in the class there are so many other students at the same time, and everyone’s got their problems, so. The teacher hasn’t been able to. Be there for each, more than two minutes [laughs]. It’s like that.” (S7) If the teachers had more time for individual students, problems would be resolved faster: “Well, personally it would have been contributing a lot that, teachers would have more time, in-person with each student to solve the problems of that student. But the problem is that, for example in math classes, there are always so many students. Several dozen. And there is not much time.” (S7) Lack of time and therefore personalised help was considered complicating things, also in computer science classes. Every so often the lack of help led to giving up: “Sometimes with the calculator, I haven’t been even able to think that how, or, like how this would be done, or so on. If it is not, in principle, instructed.” (S9)

Additionally, exercises with deadlines were hard to complete if no help was received: “Yeah, and then, for example, if you needed to return something or some homework during that evening. So, you didn't necessarily get an answer to it, when you didn't understand a question or something.” (S6) When there was a need for advice to complete the exercises, but hard to receive it, the progress turned slower: “But then if you needed to send due to the end of the class and everybody's asking that "how this and that goes" so. You didn't have time to get the reply so then, the exercises felt progressing very slowly.” (S3) The experiences of getting help were varying a lot. Some students felt they always got help at the end, whereas part of them did not know where to get help from. Furthermore, it varied between the subjects. In some courses, teachers were making sure everyone learned to manage the applications, while in other courses there had not been enough time to learn the tools. Therefore, the students were instructed to study them independently using internet. These experiences included in their historical body could have an effect on which coping strategy to use in the future.

Regarding using instrumental support, exams were discussed as difficult. There the teachers carried out a different role than in an ordinary class, and they could not provide

support. Therefore, the students needed to discover other coping strategies than using instrumental or emotional support. These situations were considered stressful by many, because one of the frequently used coping strategies, instrumental support, was excluded.

5.3.3. Dysfunctional coping

Moreover, the findings revealed that dysfunctional coping strategies were used by the students during distance education. Dysfunctional strategies consisted of self-distraction, denial, venting, substance use, behavioural disengagement, and self-blame. Self-distraction and behavioural disengagement were analysed from many discussions, whereas venting and self-blame only in a few. Substance use was not mentioned by any, neither did denial. Even though those did not come up in the interviews, it does not mean those are unused. They might be uneasy to talk to in a public place with a stranger, therefore some of the strategies used might have stayed unspoken. Additionally, when asking about coping strategies, it might be more challenging to recognise those dysfunctional strategies.

Self-distraction

Self-distraction consisted of two subitems, which were turning to work or other activities to take one's mind off the things and doing something to think about the stressor less such as going to movies, watching TV, reading, daydreaming, sleeping, or shopping. The analysis suggests that using self-distraction could be related to their historical bodies in terms of self-regulation skills. Furthermore, the teaching methods could either promote or discourage the use of self-distraction.

The distance classes were generally considered boring. That was frequently discussed making it harder to maintain self-control, and shifting the attention on Netflix or smartphones was way too easy: “So yeah, it was always like that; the phone was on the other hand and from the computer, if the teacher just explained something there and the subject or topic wasn’t interesting at all, then you just easily got immersed in the phone or (-) the teacher was like 'now you can start doing exercises', you are a bit like what there has been talked about during the last half an hour like no idea.” (S5) Whenever the teacher assigned tasks and let students work on those alone, the threshold to turn off the computer and do something not related to school was lowering. In distance classes, the students’ self-management skills were heavily tested.

One girl mentioned sleeping during the morning classes, which impacted positively on the energy levels, but negatively on school-related stress: “I set an alarm to myself at the time the class ends, that I’ll sleep when. I set that and slept and then I stop the [Teams] call when there will be an alarm. That when I leave the class, I'm more like rested. But then, it burdens that you haven’t really been in the class, and you haven’t learned those things and you stress more that you can’t do those.” (S3)

Luckily, the stress caused by self-distraction during distance education led to active coping for some students: “That can be just on the phone the whole lesson or watch a book or go to [virtual] class straight from bed but. Yeah, at the end I got such a feeling that now I just must wake up, wears clothes, and kind of go to the [distance] class. Because

then, at least personally I got a bit distressed that now I'm just lounging in the bed and being in the class. Maybe it was like, it easily ended up so that, it was challenging in that sense, that you became really lazy. And you needed to try to cheer yourself up not to leave the class even though you could have. And to be active there all the time." (S1) Here, the school as part of their historical bodies could be analysed. When some teachers were strict with the students attending classes, the others were leaving them to study independently or did not require any activity. Some of the students, with varied historical bodies, were able to manage the increased responsibilities, whereas not all.

Behavioural disengagement

Another dysfunctional strategy that was discussed among the students was behavioural disengagement, which also consisted of two items. Those were giving up trying to deal with the stressor and giving up the attempt to cope. The students with their varied historical bodies were utilising this strategy at varying levels: "Probably perseverance, that I give up quite easily or that, I have in my character a bit like if something doesn't succeed immediately, it starts to annoy a lot. Like that [I] could try again many times so [laughs] it's a bit. In certain things it's bad. That I can easily just give up. It is something that I should develop." (S10) Whereas some of them described being perseverant, others mentioned giving up easily.

Behavioural disengagement was mentioned frequently when the girls described encountering technical problems and could not find a way to overcome those using active coping. Moreover, it was sometimes related to not receiving instrumental support or not knowing where to seek it. Support from friends, dad or teachers was considered as a significant factor to cope with the challenges: "Many times there have been like, wanting to give up, but then just had to cope with necessity, and of course, because you can anyway ask from the teacher and dad and friends, so they have been helping a lot with it, to cope with everything." (S2) Those situations emphasise the importance of a support network as part of their historical bodies to prevent using behavioural disengagement and encouraging to seek help.

Very often, the reason leading to behavioural disengagement was technology: "And maybe because of that, it feels like you rather do everything with pen and paper, when it's like, that you can't use [the applications], so it's a bit like you can't even try anymore [laughs]." (S8) Every so often ICT-related problem decreased the motivation and led to not having the energy to invest in studying anymore: "It had quite a lot of impact. That just when you could not do something, then it started to frustrate. You could no longer invest in it." (S6) In some cases, the students got so frustrated that they took an absence from the class rather than kept fighting with the applications.

Since the technology was often causing behavioural disengagement, their historical bodies in ICT skills could have an impact on using this strategy. Every so often, the platforms were lagging or crashing due to the peaks or internet connection and even teachers could not help. In terms of their historical bodies, behavioural disengagement could be therefore related not only the self-regulation or personality but also to their home. Some of them might have a better internet connection or fewer family members to share it with, and people to request help from easily. Moreover, in distance classes they

were often alone, therefore using for example instrumental support could be seen requiring more effort.

During distance teaching, teachers did not recognise that easily whether the students had problems, which sometimes led to not asking for help at all: “Just that some things might be left unlearned, and the teacher doesn't necessarily notice that. Just that, because you can’t get help so easily, like if you could just ask that at the [traditional] lesson. Like if we were at school normally. But then if you must send a Wilma message, often you just leave it. Or maybe so that, like the teachers, don’t necessarily notice that, whether the student learned the thing or not.” (S6) Moreover, there had been feelings of giving up with ICT completely: “Yeah me too, that if it doesn’t work out the first couple of attempts, then it easily leads to giving up with the ICT completely.” (S3) One student told having no patience with more challenging topics, which led to the ability to concentrate not being enough in order to keep trying to learn those topics.

Every so often the environment influenced the coping strategy used. It could either facilitate active coping or behavioural disengagement: “Yeah, it does have an impact because, at school, quite many are like if you start calculating there that ‘Yeah it is not this and not that’ so it immediately goes like, that I’m giving up, so then at home, you can be a bit more patient with the thing that you learn.” (S3) Giving up easier in school context could relate to both their historical bodies and interaction order. Lower self-confidence and negative feelings when comparing oneself to others might frustrate together with interaction order and roles in the class. In distance teaching, there might be less social pressure and people, which facilitates choosing active coping.

In turn, some students discussed distance teaching rather promoting behavioural disengagement. In traditional classrooms, it was possible to ask help so that the others in the class did not hear the question, whereas in distance classes the questions were asked in front of everyone. Another option was to send a Wilma message, but it was considered slow and requiring too much effort which led to decreased use of instrumental support: “Yeah, don’t bother sending any message separately that how to do this but rather is like, well, I don’t even bother to ask.” (S9)

Venting and self-blame

Venting consisted of two items, which were saying things to let the unpleasant feelings escape and expressing the negative feelings. Venting came up when describing, for example, feelings when encountering technological problems: “Yeah, I lost my temper quite [laughs] many times.” (S10) It could be analysed to be related to their personal characteristics as part of their historical bodies. Sometimes the feelings were ventilated by harming the source of the stress: “Well, sometimes I have been beating the computer a bit [laughs] like it has been annoying a bit that no, why did I do this, what has happened.” (S2) Moreover, the venting might be used less in a situation, where they are other people involved, so for example, when studying in the classroom instead of studying alone at home.

Self-blame included two subitems. Those were criticising themselves and blaming themselves for what happened. Self-blame was observed in some discussions directly, such as blaming themselves of messing up with the computer, or indirectly. For example, when the girls compared themselves to others and felt disappointed because of feeling

like everyone else knows these things except them: “The others might have used [applications] with friends and learn through that. And if someone else, like in a class, knows how to use [applications] and you can’t, so that’s a bit like.” (S8) Not being able to do something led to criticising oneself for being unable to do anything “A bit like I’m in a hurry and distressed and I don't know anything.” (S3) Every so often those emotions prevented them from requesting help, because of feeling that things should be familiar already.

5.4. Resilience: READ scale

Discourses revealed that the crisis-prompted distance education was shocking for the students. However, some of them discussed, that after the initial shock, they got used to it. That, for example, indicates resilience, bouncing back, and returning to normalcy. Whereas resilience could be part of their historical bodies affecting how they adapt to the crisis, it is also a result of that. Based on their historical bodies, they might have some protective factors stronger than others. Next, the factors related to resilience are analysed from the material. In order to observe the factors of resilience, the revised version of READ scale by von Soest et al., (2010) was adapted. The scale is presenting factors, that could indicate higher resilience. The results are analysed using nexus analysis where applicable.

5.4.1. Personal competence

Personal competence focused on five factors, namely g*oal orientation, realism, competence, self-confidence,* and *positive outlook*. All of those could be observed from the interview material, goal orientation the most, which came up almost in every interview.

The girls discussed which issues they would like to develop, what aims they have for the future, and how they are motivating themselves to learn or use ICT although not finding it interesting. Perseverance was mentioned by some, which could indicate *goal orientation*, as well as scrupulously attending classes and maintaining routines in order to keep up with the teaching. Determination was visible in some answers: “And then. I still always want. If I have a problem, I want it to be solved and then I just ask from dad or, such. Then it's, you get it solved and, everything is fine.” (S11) Achieving the goal and learning something led to more positive feelings. Several girls mentioned being unmotivated to use ICT in their leisure time, except smartphones. Nevertheless, they had the motivation to learn to use ICT in order to keep up with the technological development and current society.

Realism was also observable from the data when the girls were able to put things into correct perspectives. For example, when they offered advice of not stressing too much but focusing on the subjects that matter for the future: “Probably that there is no need to stress so much and that it’s not really. Well, the first period is bad, but after that, it’s not as bad as everyone says. Exam weeks are holiday weeks. They are really very relaxed, and it’s not the end of the world even though an exam doesn’t go that well.” (S10) Some students mentioned there was no need to stress or get distressed if something does not work immediately, because there is always someone who can help. Here, the variation of their historical bodies is evident in school, family, and friends. Some of them felt like

there was nobody to seek help from. Therefore, even though it is realism for some, it might not be that for all. In addition, thinking that technology is not rocket science was mentioned: “Maybe like, an attitude, what is said just like. That these things are not like rocket science.” (S9) Information technology received appreciation as well, even though often being the cause of the frustration. All of them were able to consider both the good and bad sides of ICT, as well as often putting things into correct perspective.

The experienced levels of c*ompetence* were varying among the interviewees. Sometimes, the competence related to ICT was recognised high: “Probably not. I have never encountered anything so that there would have been a problem, or I couldn't solve it by myself. In that sense, I'm doing pretty well.” (S1) Most often, the students assessed their competence as average: “Maybe like, an average that just when I’m not any gamer with those computers that there isn't like inherent feeling to use [laughs] those, especially any computers, but I do understand them.” (S2) There were also students, who evaluated their competence low: “Well, for example, if I need to be able to do something, I cannot. I find it hard to understand, that how everything works, and I'm not good with these computer and phone things in general.” (S8)

Competence was not always either-or. Some students felt being competent in some areas of ICT, such as editing videos or writing, but weaker in others, like when using calculator software. They also mentioned being competent in other areas aside from ICT, such as in music, sports, languages, and school in general. The more confident students could be analysed as feeling more competent than the less confident students. In addition, seeking and getting help seemed to be easier for them. The feeling of being competent was often related to higher self-confidence and positive outlook.

With self-*confidence*, the situation was much like with competence. Some of them could be analysed as being very self-confident, whereas others less. That also reflected the experienced competence: “Often I’m [good] at interaction and then group work and such that I’m anyway getting well along with everyone. [Are] we good at anything else [laugh]?” (S3) Most of them could be analysed having average self-confidence so that they were able to realistically assess their skills: “I am quite an average student so that I have challenges in certain subjects. Just mathematical subjects. There have been certain kinds of difficulties. And I get like basic grades. That, I have been doing now very well or surprisingly well in the first grade of upper secondary school. I was surprised it went so well.” (S10) Moreover, self-confidence was analysed as being related to which coping strategy to use, as discussed later.

Despite the challenges, the students were trying to keep up the optimistic attitude: “But, I’m the kind of person that I always try to think that now this must be just managed. That traditional teaching will continue someday. If it doesn’t continue now in the autumn, then it continues someday, in the spring or a year or so.” (S1) Self-confidence often was related to positive outlook, so that the more confident girls felt like being able to overcome the problems more often. If they could not do it alone, they had social resources or family to receive support from: “[laughs] Well, like pretty good, that I know how to use [computers] and I don't have those situations terribly often that I couldn't use or didn't know how it works. But then if I have those sometimes, then. I ask from a friend or dad or so. It’s not like.” (S12)

Therefore, both self-confidence and positive outlook could be explained by their historical bodies in terms of support networks. positive outlook came up so that even though there were problems, many students were able to believe in better tomorrow or find something positive about the situation: “You will learn over time.” (S12) One of them also discussed an optimistic attitude being a valuable asset when facing challenges. Moreover, the girls mentioned they had been learning a lot about ICT during the distance teaching, even though it caused frequently stress and almost everyone hoped to get back to traditional teaching.

5.4.2. Social competence

Social competence consisted of four items, which were *positive social orientation, making contact, humour,* and c*omforting others*. Almost all the girls described themselves as being social or getting well along with others, which could be analysed as social competence. The lack of social contacts during the distance education was considered negative, causing the feeling of being completely alone and decreasing motivation. Friends were described as a motivating factor and providing both emotional support and practical help.

Social competence was analysed in the discussions where the girls mentioned being social and getting well along with the others: “Well. I’m quite talkative so that. If I’m in a familiar company, then I really dare to talk. And sometimes I surely talk too much [S11 and S12 laughing] And then. Well, I like being a lot with friends on leisure time. Always when I have time and then, with the boyfriend. Then I go to the gym. Yeah, every so often I do school as well.” (S11) There could be observed all *positive social orientation, humour* and making contact.

Humour and making contact were difficult to observe from the interviews, even though many of them were joking during the interview, therefore using humour in a social situation. *Comforting others* could be analysed when the students helped, for example, family members or peers in technical problems, even though sometimes that had a negative impact on them: “Yeah, it affects, like when I can [use ICT] a bit better than girls at my age, so then quite many have asked help from me. And then you lose your own concentration when you help the others so then again, it goes a bit differently.” (S4) When considering the students' historical bodies related to social competence, there was not that much difference between the interviewees. All of them were analysed to be socially competent, despite their backgrounds. They were using humour, comforting others, and making contact with others.

5.4.3. Structured style

The structured style consisted of *aims and objectives, planfulness* and *organisational skills*. At least some of those could be analysed from all the discussions. As mentioned before, the students possessed diverse skills in self-control and management. That could be seen related to the Structured Style so that their skills in following plans and routines were varying. Many girls mentioned that succeeding in distance teaching is mostly about attitude, to be able to keep up the routines. Moreover, those could be facilitated by teaching methods. Therefore, their diverse historical backgrounds related to the current

place of studies and personal characteristics could be analysed to have a positive impact on Structured Style.

Aims and objectives could be analysed for example, when the students were discussing encouraging themselves to attend the classes, even though it would have been easy just to skip. Moreover, some of them tried until solving the problem, whereas others were emphasising the importance of doing only how much they felt like being capable of. aims and objectives were also identifiable when the girls had taken decisions at school based on their dreams so that they selected the courses they found the most useful for the future: "I don't actually have anything like concrete yet that what would I like to do but I took those subjects so that they are useful in many, that it doesn't matter where you want but if you pass those with good grades they are helpful [laugh]." (S2)

Planfulness was identifiable when they mentioned having plans for something, either related to handling current studies or getting somewhere in the future: "There, I prefer music and such, and I've been thinking that for the future, I would apply to music education or similar the next spring." (S9) Also, preplanning for handling the daily studies was mentioned by some. For example, always remember having a computer muted, recharger with you or something to help with coping with the problems such as chocolate.

Two girls directly mentioned having good *organisational skills*: "Perhaps, in organising in general, so that I'm kind of pretty organised, and like many people know that I have my calendar on the table in each class and such, that I mark there a bit of everything. So that life is organised in there." (S9) Moreover, also others were indirectly indicating having those skills, at least in some level: "It has been much more independent, and it has required taking much more responsibility than normally. You had to remember to do everything and at the right time and be there and remember that when we had an independent class and when normal teaching." (S8) Many girls mentioned distance teaching requiring more organisational skills compared to normal teaching, which was also considered as one of the most critical challenges of it.

5.4.4. Family cohesion

The fourth category of READ scale, family cohesion, consisted of six items, which were *shared values, comfort, common positive outlook, support, shared activities* and common perspective. During the interviews, support came up the most, whereas the other items were not that easy to analyse from the discussions. This might be due to the interview questions, which were primarily related to technical problems and overcoming those, not merely families.

Every so often the family's *common* perspective or *shared values* could have had an impact on allowing girls to use ICT in childhood. Common perspective could be considered in discussions, where the whole family was considered modern and capable to use technology: "Environment, of course, people, so that there are such people around you like e.g., own family who are like modern that they know a lot and can use [laughs] their own phones. (-)" (S1) *Shared activities* with siblings, such as video gaming was considered to have an effect on their ICT skills as well: "I think it is because when I was little, I liked gaming a lot. That probably, that might have impacted a bit. And then, of course, when a big brother was like that, he also liked gaming. Probably from there." (S7) Moreover, observing dad fixing phones could be analysed as Shared Activity.

As discussed before, the findings revealed that the students received *support* mostly from dad, but also from other family members. Mentioned support was often technical, such as showing or explaining how to overcome technical problems. Both school-related support from family and lack of it correlated to the girls' experiences of their ICT skills. The diversity in their historical bodies was obvious. Most of the girls mentioned having someone at home, often dad, from whom to get support, whereas a couple of them mentioned having nobody who could support them. Some of them indicated seeking more help outside the family, whereas others mentioned family being the primary contact. Moreover, sometimes the girls were the ones supporting family members: "Usually, we have those little ones as well, (I'm the oldest in our family), that sure I can [laughs], they have been taught that much and they have started studying computer science at school a bit earlier than I did. Now they have all emails, their own Wilma accounts, and such so there is also always homework. Then I help them always the best I can if they cannot do something." (S5)

5.4.5. Social resources

Social resources consisted of five items, which were *encouragement, cohesion, support, help* and *appreciated by others*. All of these could be analysed from the interview material, appreciated by others the least. It could be observed perhaps when the students told being the ones who the others ask help from. The most often mentioned item was help received from social resources, who were commonly discussed as being family, friends, or teachers. Those groups were mentioned also to provide support, encouragement, and the feeling of cohesion.

Every so often, the teachers were acting as *encouragement*, inspiring the girls to focus on learning: "Probably at least those primary school teachers who are, they were all so awesome guys that it was always nice to be in their classes and you were able to listen and study." (S5) There could be equally considered their historical bodies, as many of them were studying in diverse schools, different grades and they draw from a diverse educational background. During distance teaching, the support, cohesion and encouragement of teachers and friends were not as visible as during traditional teaching: "But I hope so much that it [distance teaching] wouldn't continue because it surely is important, at least for me, to get to see friends and see those teachers really. And somehow there is like, I mean it's really grim just to be on the computer all the time. It doesn't feel the same at all of course." (S10) Teachers and peers were mentioned bringing motivation, feeling of safety and in general being a positive thing, which could be analysed as those social resources providing encouragement.

Cohesion could be analysed from the discussions as well, especially when the girls mentioned missing the social environment at schools, such as friends, cafe, and student union activities. In the music high school, there was discussed being musical people, who were making musical performances during the breaks. Many students discussed being a part of something, like a group of friends: "And maybe not just the teaching, but at school, there are also those friends that you see. During weekdays, for example separately those school friends and not, like at school seeing the other friends. But there are always those certain friends that are there at school. And you've got used to seeing them like five times a week." (S11)

Those people with whom they felt cohesion, were providing support, or just motivating by making feel like not being alone in the situation: “Maybe just because, when you go to school, there you somehow. You can better position yourself into studying. There is no kind of temptations to do something at the same time when being at school. And then, of course, there is the thing that when there are friends, you don’t need to be alone at home, so that also motivates you, when there are other people close and in the same situation.” (S9) In addition, group stupidity was generating the feeling of not being alone or only one not understanding something. Moreover, it enabled sharing negative feelings. During distance education, cohesion was decreasing. Cohesion was discussed being built typically between the classes, and that kind of casual interaction was left out during distance education.

Support received from social resources was mentioned by all the students. The peers, teachers and IT support at school were all discussed as a source of it. It could be both emotional support and practical help: “And in some subjects, the teacher might have phoned, always to you personally. Then asked that ‘how is it going’ and ‘do you need help in anything’.” (S12) When teachers and study advisors asked personally how the students were doing, it lowered the threshold to share the issues and gave the feeling of relief.

Additionally, sometimes teachers were flexible when the girls were facing technical problems, which could be also seen as support: “I have also, at least five times during math exams, been like. This Moodle doesn't work, that. My exam might be late, and they [teachers] were like, 'no worries'. Many people are using it now, Moodle, so it was probably lagging, like. Then they. Fixed and gave extra time and such.” (S11) In turn, some of the girls mentioned not receiving enough support: “Perhaps, I'd needed more, so that someone would have really come to explain and teach and, for example, had a look into those with me right in the beginning that how those [applications] work. But like, when there is a big class and only one teacher, it's hard to make those 40 people understand the topic in half an hour [laughs]. So, maybe there would have been the need that someone had explained it to me kind of in-person.” (S8)

The group size was frequently discussed being the reason for the lack of help. Moreover, a couple of girls mentioned not receiving enough support with ICT because teachers often assumed that they are more skilled than they are. Many of them mentioned missing the friends and social environment during distance teaching because those in many cases facilitated asking and getting support. This could be related to their historical bodies in terms of their current place of studies and ICT skills. If there is nobody to request help from at home, the school might remain the only place to receive help. Moreover, some of the students discussed receiving more emotional and practical support from school staff than others. That indicates the current place of studies might have an impact on receiving support as well.

Even though *help* from social resources was related to resilience, one girl mentioned relying even too much on it, which she considered a negative thing reducing initiative. Like with support, the varying historical backgrounds were identifiable there. Whereas some of them mentioned always having someone to ask help from, others had the feeling of not knowing where to seek help from. During distance education and related communication issues, it got even harder: “More challenging. And just that. I don’t know, it has been much more challenging just to be alone and then when you couldn’t kind of ask help from anyone or.” (S6) Help was asked and got from multiple sources outside the

family, such as from friends, teachers, study advisors, IT support or boyfriend. The context where the help was needed influenced the target to seek help from: "Mostly friends at school and family members in leisure time.” (S8)

6. Discussion

In this chapter, the results of the research are drawn together with previous literature. The aim of this research was to gain an understanding of the use of ICT in upper secondary school education by interviewing students. The primary focus was on distance education during the COVIC-19 pandemic and female students' experiences. In order to answer the research questions, semi-structured interviews were conducted. The research questions were as following:

- RQ1: How is ICT used in upper secondary school during distance education?
- RQ2: How did teenage girls studying in upper secondary school experience distance learning during the COVID-19 pandemic?
- RQ3: What kind of coping strategies did the teenage girls use to overcome the challenges faced when using ICT?
- RQ4: What kind of factors of resilience are coming up when discussing the adversities related to the use of ICT in school?

This study will now present the key findings and how they relate to previous research.

6.1. Students' ICT skills

The study represented a complex picture of the students' experiences with the distance education during the pandemic. The students had varied historical bodies including life experiences, physical conditions, goals, and purposes, which impacted their adaptation. Those students who felt more confident with technology typically managed both distance education and traditional classes better. Many students stated that they did not receive enough ICT support. Moreover, an identical situation could be observed in many ways based on their prior experiences. For example, a similar question from the teacher was experienced in different ways. Furthermore, interactions during distance classes differed from traditional classes, which was considered positive for some students whereas negative for others.

The results suggest there is a significant variation in the students' ICT skills and related backgrounds. In prior research, the difference between individuals has been studied to outweigh the differences between genders (Kaarakainen et al., 2017). In this study, the students had diverse historical bodies, which reflected their ICT skills. Students who were more confident with their competency and did not encounter many problems. However, other students identified themselves as being poorly skilled in regards to their ICT skills. However, categorising the ICT skills was complex. The description of the skills was directed especially on their confidence. Moreover, their view of themselves as users of ICT was constructed through interaction with others. For example, if they observed others around being more skilled, it would make them feel more incompetent. Therefore, interaction among the people in the past formed part of their historical bodies, which affected their confidence with ICT in the present.

Another theme closely related to their historical bodies in ICT skills was education. The girls were from diverse backgrounds, and they experienced the sufficiency of ICT-related teaching differently. Most of the interviewees, albeit not all, studied in the same music-oriented upper secondary school. In general, they studied different subjects, at different grades and different schools. Furthermore, they had backgrounds from various primary

schools. Some of them were living in smaller municipalities, or had been growing up in one, whereas others in a city. The cultures of those places, as well as the financial situation of the municipalities, might influence what kind of possibilities the schools had provided. Therefore, it is no surprise, that their opinions about the sufficiency of ICT education varied.

According to the report of Educational and Cultural Services in the City of Oulu (2018), the schools were utilising ICT competence levels in varying ways and often their realisation was unfollowed. This is in line with the results of this study. The girls discussed having diverse experiences of how sufficient the use of ICT had been in primary school. Moreover, the ICT-related courses were unavailable for some students in upper secondary education. The findings suggest that the students' ICT skills are varying when they start their upper secondary studies. Unlike the other school-related skills, the variation in ICT competency is not reported or followed. Therefore, the pupils who need more support do not receive any.

Furthermore, the teachers' attitudes and skills towards ICT were discussed and could be seen as being part of the students' school-related historical bodies. Even though the students reported teachers handling ICT quite well, their incompetence was mentioned as being a part of the problem when the students moved to distance learning. The discourses revealed that not only the students, but teachers also had diverse backgrounds in ICT. Additionally, the data suggests, that there is not enough time reserved for neither the teachers to learn those applications nor teach them to students. The sum of those issues might lead to both students and teachers feeling incompetent.

According to Finnish National Agency for Education (2019), women possessed a more negative attitude towards their mathematical skills and their skill levels were lower compared to men. In this study, there was no control group of men, but many students discussed mathematics as being difficult. Especially calculator software and other applications used in mathematics were mentioned causing a lot of headaches. Some of them mentioned, how they still had not learned to use them, which made it hard to do well in the exams.

Family backgrounds represent a significant factor regarding a pupil’s ICT skillset. For example, restrictive parental mediation has been studied to have a negative impact on the adolescent’s digital skills (Rodríguez-de-Dios et al., 2018). In this study, there was discussion, that the parents have been facilitating practicing ICT skills by not prohibiting the use of technology. The results from this study suggest how the student's family upbringing could compensate for the insufficient school-related background with technology.

The difference in their family backgrounds was evident. For example, if the students had parents who used ICT at work or drew from certain educational backgrounds, there were more opportunities to ask for help and be encouraged to use ICT, which led to increased confidence. This could also be related to socioeconomic factors, (Koivusilta et al., 2007; Pagani et al., 2016). In turn, for those students who had nobody who could help them at home, challenging problems were never resolved. Likewise, relationships with their parents could either facilitate or hinder requests to help, as well as the parents’ availability. Siblings' ICT skills did not seem to have a direct relation with the girls’ confidence as the parents did.

The historical bodies of the students related to family consisted of parents’ work, education, and intrinsic motivation. Upon further analysis, accommodation and culture

could be an influential factor of their family-related historical bodies. For example, if there was someone at home capable of helping and if the father was interested in technology. It was interesting to observe, that the fathers were mentioned often. On the other hand, on average only 17% of the workers in the ICT industry in Europe are women (Hyrynsalmi & Hyrynsalmi, 2019). Furthermore, there could be a cultural factor related to fathers having more leisure time in family life and therefore being able to assist the children with their studies.

Although the skill levels varied among the students in the present, the intrinsic motivation towards ICT did not. The girls discussed not utilising ICT often in their leisure time, unlike their male peers. This finding agrees with the results of other surveys that researched ICT use of adolescents in Finland (National Institute for Health and Welfare, 2019). Similar results were also discussed by Siddiq & Scherer (2019). However, the more confident students discussed how they had been using computers more often in their childhood. Girls who were insecure with computers highlighted the experience and the use of ICT less often than their more confident peers. Despite that, the interviews revealed they were using ICT in the present and were using it in the past as well. The motivators that were considered to explain their ICT skills were childhood hobbies and extrinsic motivation such as good grades or future studies.

6.2. RQ1: How is ICT used in upper secondary school during distance education?

The first research question focused on the use of ICT in upper secondary schools in a time of distance education. In terms of user experience and usability, the application characteristics that were positive for some students have been found negative for others (Vuorio et al., 2018). In this study, many applications were generally found either as challenging or easy to use. However, some of the applications were considered easier for some students because of their historical bodies, for example, related to their year of studies.

ICT was used to bring versatility to the classrooms in the form of podcasts, discussion boards, videos, and images. Specific applications for certain subjects were discussed such as math calculators, and general applications to prepare presentations and write essays. Especially the mathematics applications which were considered frustrating, and not all of the students still had learned to use them. Additionally, an exam platform Abitti was frequently mentioned. It was considered as easy to use by the senior students, whereas complex by the junior students. There were also applications to facilitate communication, such as Wilma, WhatsApp, and Teams. Most of the applications were used prior to the pandemic, but distance education presented unfamiliar applications for the students, such as Teams.

The findings from this study suggest that the applications used were not varied across the courses, while the teaching methods were. Therefore, the same applications could be applied in either motivating or discouraging ways. The findings revealed that distance education had an impact on the teaching methods used. Motivational teaching included bringing versatility into the class by adopting technology, arranging digital teamwork, and promoting interaction in the virtual classes. Previous studies suggest that during distance education, teachers have tried to support the students by using activities like communication, collaboration, shared learning materials, and digital student work, assessments, and examination (Bergdahl & Nouri, 2020). The results of this study

confirm these activities, at least in some schools and by some teachers, and the variation in their historical bodies is identifiable here too.

At times, teaching methods influenced the interaction order and coping. For example, using instrumental or emotional support could have been easier according to many of the students interviewed, if there had been more communication in distance education. These results also confirm the suggestions by Brändström et al., (2012), which considered classes with more communication being more successful compared to teacher-led lecturing. The teachers who effectively supported the adolescents by providing options to privately share issues related to school received praise from the students. Additionally, providing opportunities to ask for help lowered the threshold to request help. Those actions promoted self-management skills and facilitated overcoming frequently encountered problems.

However, the data suggests that certain teaching methods were unmotivating and disengaged students from the classes. Discouraging teaching methods required too much self-management, they did not include much interaction and established a distressing atmosphere in the class. The interaction order in the distance class varied from the traditional classes, which was hard to manage for some students, and perhaps for the teachers as well. Teachers have suffered technological issues, which have limited their practice during the COVID-19 pandemic. The limited previous experience of using digital tools caused problems for teachers. (Bergdahl & Nouri, 2020.) The findings from this study confirm this issue. The students discussed how the teacher incompetence caused challenges. The teachers drew from diverse backgrounds, which affected the students' skills and learning. However, the students reported teachers handling the use of ICT quite well when comparing their skill levels and the rapid change due to the COVID-19.

6.3. RQ2: How did teenage girls studying in upper secondary school experience distance learning during the COVID-19 pandemic?

The second research question aimed to find out how teenage girls experienced distance education during the pandemic. The findings reveal that most of the students found distance education harder than traditional classes, but some of them equally enjoyed the change. The differences could be a result of their historical bodies. For example, two girls discussed how the adaptation to distance education could be easier for senior students. The older pupils had already used most of the applications for almost two years, which proved to be a useful asset for distance classes. Additionally, family background and ICT skills were discussed during the interviews. The issues discussed included teaching, learning, communication, technology, environment, wellbeing, and exams. The findings suggest that many of those issues could have been overcome by adjusting the teaching methods and providing additional resources for the learning applications used.

Interaction in distance classes and traditional classes contained some similarities. In both, the interaction was primarily controlled by the teacher. Nevertheless, the teacher had less control over discussions in distance teaching. This was because the students were able to turn off their cameras and microphones, and sometimes even the teachers' microphones, which impacted significantly on the interaction order.

Moreover, in distance education, all interactions took place at their home, and family members were regarded as either helping or disturbing. In a school setting, the students discussed studying either alone or in different-sized groups using devices. When seeking help from peers, the interaction happened both face-to-face and mediated using computers

and smartphones. Some of the students needed to carry out many roles simultaneously in the distance class. They were students, daughters, friends, girlfriends, IT-support, and sisters, through mediational means and face-to-face.

Even high-performing students have been studied to find distance education difficult, isolating, and discouraging. For example, it requires increased self-management skills, decreases social contact, causes technological problems, and makes it more difficult to receive help. (Niemi & Kousa, 2020.) The findings from this study confirmed all those results. The girls who had better self-management skills and who possessed a more structured lifestyle seemed to manage distance education better. The teaching methods used could either promote or discourage these attributes.

The lack of self-management skills led to using technology in other means than studying, such as a distraction, as discussed also by Olofsson et al (2017). In turn, smartphones and ICT have been studied not to be only a distraction, but also a tool providing peer support and preventing falling behind at schoolwork (Juvonen et al., 2019; Olofsson et al., 2017). This study confirms all these results. Although students discussed being easily distracted by smartphones, they were also used when requesting help related to technological issues. The students who perform below average have been studied to need more support to focus on their learning, whereas high-performing students were capable of resisting urges and distractions better (Berghdahl et al. 2020). This study did not consider the students' academic success, but there was a clear indication that some of the students were more easily distracted by the technology than others. They would have needed more support, classes with social interaction, and teacher-led control when they found schoolwork uninteresting. Lack of those led to increased stress levels and feelings of incompetence, which decreased motivation even further.

However, as the previous literature suggests (Bergdahl & Nouri, 2020), and this study confirms, some students were able to engage more in studying during distance education. That could be due to their historical bodies and whether they possess the skills to manage their schoolwork independently or have a support network that provides them social resources. While some of the students found studying at home more peaceful and less burdening, that was not the case for all. Their historical bodies could be also identifiable in this instance. Some students had further responsibilities when studying at home, such as taking care of their younger siblings. Moreover, when some students considered studying at home being easy because of being able to do things at their own pace and seek help using mediational means, for others the lack of peers and teachers meant being alone and without help. In addition, some of the more confident students considered, that in the end, the success in the schoolwork is up to the students themselves. The students drew from diverse backgrounds though, therefore not all teenagers can be expected to be able to manage their own behaviour.

As discussed by the prior research (Niemi & Kousa, 2020), technical problems decreased motivation and caused a variety of negative emotions. Every so often, the students would have been capable to complete the assignments with pen and paper, but the struggle with technology caused, for example, exam questions to be left unanswered. Applications were crashing and lagging, they were challenging to use and there was not enough support available. The findings revealed that the students, despite their ICT skills, considered technology as the cause of the struggle, and its usefulness was questioned. When continuously facing problems with ICT and not being able to overcome those it could influence the girls' overall motivation, confidence with ICT, and how they see themselves as learners in the future. The girls had varied responses to the problem situations, and the support from the teachers and family members often facilitated the stress experienced.

Furthermore, distance education impacted learning, which was in generally considered harder. It required more self-management and responsibility, for which many of the students did not feel ready. The physical presence of a teacher was discussed as bringing the feeling of safety and decreased responsibility. The grades had been adjusted so that distance education would not affect those, therefore the learning did not go hand-in-hand with the grades. This made the students feel incompetent, which in turn, raises a question about the evaluation of secondary school pupils. Do the grades present such high importance, that they matter more than the actual learning process? And, how does the evaluation vary among the schools, since the grades have an impact on, for example, postgraduate studies?

Additionally, the courses that included writing essays were considered easier, whereas mathematics and subjects that required managing more complex applications were discussed as challenging. That was due to the lack of communication and difficulties to access help. During distance teaching, the students learned many skills, such as initiative and ICT skills. Both were considered important in distance education and in further studies.

Moreover, distance education provided alternative learning methods for the students instead of one, standard way of studying. All the students attend the class with their diverse historical bodies and the students discussed being diverse learners. Some of them were learning when listening or actively asking questions and attending classes, whereas others preferred completing assignments independently. Those, who preferred studying independently, found distance teaching easier whereas so-called social learners found it harder to adapt. The tranquillity of the home environment also had an impact on adaptability.

The students with varied historical bodies experienced distance education's impacts on learning differently. It was easier for those, who had higher levels of self-management, social resources, or who found the school environment burdening. Students feeling social pressure felt relieved by distance classes, but those needing more help felt left out. Furthermore, if ICT had been applied in studying so that it supported individual variability in learning, it could lessen the divide between the students. Students might learn differently, therefore, one standard way of studying could be changed to form a more personalised approach. That could support the individual needs within the resources of the teachers. By providing just one way of studying, only some of the students achieved their maximum potential.

One considerable finding of this study was the lack of communication during distance education. The students discussed there being assumptions, such as them being digitally competent because of their age. Regarding the interaction order, conflicting assumptions of the adolescent's ICT skills could be related to their role as representatives of the digital generation. That is not a surprise, since there have been discussions of digital natives, which could generalise all the teenagers as being good at using modern devices. Unfortunately, as the data suggests, there is a lot of variation among teenagers. Their skills are shaped by their experiences from childhood, and they are all carrying diverse historical bodies.

Moreover, sometimes teachers assumed that the students had parents at home who could support them, but that was not the case for all. Seeking assistance was harder for some pupils, whereas it was easier for others, especially because part of the non-verbal communication was left out. The difficulties to receive help were found also by Niemi & Kousa (2020). Requesting help in front of everyone in the chat was considered

embarrassing and initiating communication with the teacher required much more effort compared to the traditional classroom setting. Furthermore, the teachers did not always notice the messages. The more confident girls did not experience much difference, but the less confident girls noticed a significantly increased threshold to request help. Moreover, the occasional interaction with peers and teachers was left out during distance education.

Furthermore, the findings revealed both positive and negative effects on wellbeing. Computers were frustrating. Increased screen time was discussed and brought physical symptoms such as migraines, fatigue, insomnia, eye strain and numbness. Going to school and spending breaks with friends increased the amount of exercise and was considered mentally important rather than spending the whole day in front of the computer.

Mental effects were even more common than physical symptoms. For example, there were challenges in drawing a line between school and leisure time, and being at home increased tension between family members. Additionally, issues with technology caused a variety of negative feelings, such as frustration, annoyance, panic, and anxiety. In turn, the possibility to sleep longer and time saved in commuting were mentioned as positive sides, which increased energy levels and general wellbeing. The students brought up the importance of maintaining wellbeing and allowing compassion to oneself.

The variation in their historical bodies was evident. Many students discussed a peaceful environment being one of the primary benefits of distance teaching. Being at school, where there are hundreds of people, was considered a burden. Studying at home, where a student could focus purely on those primary contacts or be completely alone, supported mental wellbeing. In turn, the home was not a peaceful environment for all, and they had further responsibilities, for example, related care work. Regarding the interaction order, distance education was easier for those who only played the role of the student during the lessons. Some of them had to fulfil other roles too, such as caring for younger siblings. At traditional schools, they could avoid those additional roles and fully focus on studying.

The findings revealed how exams increased stress levels, both during and beforehand distance teaching. In distance classes, it was harder to receive assistance because of technical problems, especially if nobody at home could help. That places the students in an unequal position because of their diverse backgrounds. Exams were considered heavy, and the technology increased the amount of manual work. Although assignments were easy to complete, sometimes technological struggles resulted in an exam not being completed on time. The exam platforms were hard to use, and sometimes lagged so that text was disappeared repeatedly, which caused feelings of frustration. In turn, distance exams reduced the feelings of social pressure, so that the students did not compare themselves to each other that much.

In addition, matriculation examination already caused distress, because of its considerable importance for graduate studies. The girls' historical bodies could be seen to have an impact on how much the matriculation examination worried them. The senior students discussed it much more than junior students. The stress related to ICT and matriculation examination was affected by their background, such as the tendency to suffer a migraine as well as character traits including lack of self-control. Additionally, the place of studies could influence how sufficient the teaching had been.

Teachers were considered to bring security when being in the class physically. Many students missed the classrooms, where teachers were teaching and helping physically, and the students had only the responsibility to be there and learn. Distance teaching altered

the situation so that the learning was more independent and placed greater onus on the students. Moreover, distance learning was considered to be harder and required more self-control and independence. Therefore, the students hoped the refresher courses would be in a traditional classroom, so that they could receive extra support.

6.4. RQ3: What kind of coping strategies did the teenage girls use to overcome the challenges faced when using ICT?

The fourth research question considered the coping strategies used when encountering challenges with ICT. Prior research suggests that the coping strategies used vary among adolescents (Blomgren et al., 2016). The findings of this study confirm that there is much variation among the students' coping strategies. In a similar situation, the students adopted diverse strategies. Moreover, coping is related to personality (Carver & Smith, 2010). When considering personality, the students often saw themselves as having certain roles relevant to coping. For example, they considered themselves as perseverant, too dependent on others, unmotivated or helpful. Those personality factors could be related to whether a pupil uses *problem-focused coping, emotion-focused coping*, or *dysfunctional strategies.*

The findings suggest the students were using *emotion-focused strategies* to overcome the challenges during distance teaching, especially positive reframing, acceptance, and emotional support. Although, in general, distance education was considered more burdening than traditional teaching, all of the pupils interviewed found positives by using positive reframing. For example, certain subjects, the ability to sleep longer, and learning new skills such as initiative were identified. The historical body clearly related to the use of this strategy. Those, who overcame problems and consistently had someone to aid their studies were able to use positive reframing more.

Acceptance was identified as well. The students discussed that even though crisis-prompted distance education had been stressful at first, they had learned to live with it because they had no alternative. Some of them had developed new habits to be able to cope with distance education. Moreover, the attitude was considered here as a significant factor to be able to handle the increased responsibilities.

Emotional support was often requested from friends, teachers, and study supervisors. This strategy was commonly used and had a significant impact on self-image and motivation. It relieved the stress and feelings of incompetence when the others mentioned experiencing similar issues. Emotional support could be analysed to be decreasing during the COVID-19 pandemic when the students experienced less occasional interaction with each other. Peers were a motivator and the lack of physical communication during distance education was a burden. Moreover, using emotional support could be promoted by teaching methods, for example, when increasing the communication in the class. Even though some girls mentioned not having anyone at home to ask for instrumental support, emotional support was unmentioned. That could be because instrumental support was received frequently from home, whereas emotional support was given by friends. Emotional support could be related to the students' historical bodies so that it requires a trusted support network with whom they have no fear of being laughed at or mocked.

Furthermore, there have been indications, that by using emotion-focused strategies solely, the behaviour is maladaptive. In turn, if simultaneously applying problem-focused strategies, the behaviour becomes adaptable (Lee et al., 2016). The students interviewed for this study all used diverse coping strategies. There were indications, that the more

confident students adopted more problem-focused strategies, whereas less confident adolescents applied dysfunctional strategies. Dysfunctional strategies were used less among the girls who were managing distance education better, as they were using emotion-focused and problem-focused strategies.

Problem-focused strategies were the most common coping techniques discussed. Instrumental support was the most discussed strategy and utilised by all the students. Active coping was a typical strategy followed as well, at least for the more confident students. Planning came up as well, but not as often as the other two strategies. According to prior research, coping strategies are related to time perspectives (Blomgren et al., 2016). The findings confirm these results on some level. For example, the students who were capable to reflect on the past, the present, and the future, used problem-focused coping, such as planning. They had aims and goals and they were able to draw a picture of themselves as confident ICT users since their childhood.

Using planning also related to the girls' personal characteristics, as well as previous experiences. Negative experiences had led to use planning to prevent similar situations in the future, such as crashing applications, frustration, or being left without help. Because distance education required more self-management skills, planning could be seen as beneficial to be able to keep up the routines, and it was adopted by many.

Another problem-focused strategy, active coping, was also relatively common among adolescents when facing challenges with ICT. Many factors in the students' historical bodies indicated using this strategy. For example, perseverance, self-confidence, self-control, initiative, language skills, and realism were all mentioned as promoting the use of active coping. Moreover, their future goals kept them trying instead of giving up. An active coping strategy was analysed as being easier for those with more ICT skills because many concrete actions were carried out virtually. Those strategies included, for example, rebooting applications or computers, googling, and watching tutorial videos.

Using instrumental support was the most discussed coping strategy among the students. The place in which the issues came up had an impact on from whom to seek help. Often, the primary sources were teachers, friends, and fathers. When requesting help, the role differs depending on whom asks for help. A couple of students mentioned that requesting help was easier in some classes, in some situations, and from some teachers. In general, with a teacher, the communication might be more formal, whereas with friends and family it might be more relaxed. Every so often, the girls felt ashamed, or they did not dare to request help from a teacher or in the front of the class. As such, asking for help was considered easier with friends or family.

Furthermore, the courage to use instrumental support varied among the students. This could indicate variation in their historical bodies, so that something encourages or discourages pupils asking for help, such as self-confidence or either positive or negative experiences from the past. Additionally, it could be related to interaction order. When they possess a certain kind of role in the class, and they do not want that to alter by, for example, making others think they did not understand something that was considered easy. In addition, sometimes using instrumental support was either blocked by self-blame or promoted by positive reframing or acceptance. For example, when they thought that topics should be already familiar, they could not ask help but blamed themselves. Moreover, a teaching asking if everyone understand the topic either caused stress by insinuating that the topic should be easy or provided a possibility to indicate they had not understood and needed help. Therefore, the interaction order among the students in the

class varied, so that they experience their roles differently towards each other and the teacher.

Furthermore, distance teaching altered the interaction in the class, therefore, impacting the use of instrumental support. Those students, who habitually used, for example, non-verbal communication to request help, were left quite alone. That was highlighted especially if there was nobody at home to help. On the other hand, technology was discussed to facilitate using instrumental support for some, perhaps because there was no need to actually talk. The communication was managed using voice or text messages.

The social network was another crucial factor, which related to using instrumental support. It was discussed that some of the pupils felt like there was nobody who could help, whereas others mentioned always having someone. Therefore, their support network and historical bodies have a significant impact on whether instrumental support is even possible. For example, in some schools and courses, the teachers assumed the students were able to study the use of ICT independently or get help from family members. Therefore, the competence of family members could compensate for the lack of teaching at school, but those who have nobody at home capable to help, are left alone. A factor that is increasing the inequality in secondary education. Leaving those students without help at school might lead to unfortunate outcomes for those who do not receive help at home. That could have an effect on motivation by causing negative feelings and therefore lowering academic performance.

Coping strategies have been studied to be related to parental attachment (Blomgren et al., 2016). Moreover, parents have an impact on how students cope with academic challenges. They are in a central position when it comes to socialising, helping, and supporting their children in stressful situations. (Tu et al., 2020). The findings support these prior results. The students who received more help at home were also using more instrumental support. Family, and especially fathers, were frequently mentioned as the most common source of instrumental support. Therefore, the students' historical bodies include their family members' historical bodies. Factors that came up related to the received support were education, work and interests. Moreover, if the student is used to overcoming problems with the assistance of family, she might have stronger confidence to solve problems independently or with others in terms of active coping and instrumental support. In turn, if another one has nobody to ask for help from, and the problems remain unsolved, it could lead to behavioural disengagement. The lack of help, from both at school and home, led to being unable to keep up with the teaching.

Dysfunctional coping consisted of six items, which were self-distraction, denial, venting, substance use, behavioural disengagement, and self-blame. The findings suggest that distance education promoted the use of dysfunctional coping. For example, it seemed to increase the use of behavioural disengagement and self-distraction. This was because various factors altered interaction order and the lack of instrumental support. However, the use of dysfunctional strategies seemed to be rare compared to the other two categories, and often a result of unsuccessfully adopting other strategies.

Behavioural Disengagement was not often the first strategy to be applied, but rather a result of an unsuccessful coping attempt. For example, if the students had tried to adopt Active Coping or Instrumental Support, but those resulted in nothing, some of them mentioned then using Behavioural Disengagement. There was variation among the students so that some of them were more perseverant than others. Their historical bodies in family and ICT skills could be related to whether to use Behavioural Disengagement. For example, if they had nobody to request for help, and their ICT skills were not adequate

enough to overcome the stressors, they had no other option than give up. Moreover, the place in which the stressor came up, had an impact on whether to utilise this strategy.

Using self-distraction clearly increased during the distance classes, where the teachers had less control over the students' activities. Therefore, the students who had lower self-management skills often turned off the camera and microphone, and watched Netflix or used smartphones during the virtual classes. The analysis suggests this could be overcome by teaching methods, which promote more interaction and less independent work.

Results indicate that the interaction order had an impact on which coping strategy was used. This varied depending on whether the pupil was home alone at home, in a virtual classroom, or in a traditional class. For example, for some students being alone at home led to dysfunctional strategies, whereas for others it promoted problem-focused coping. Moreover, in the traditional class, the students were able to use non-verbal communication to receive instrumental or emotional support, but in a distance class that was considered harder. Additionally, not all adolescents dared to request help from a teacher. In traditional classes, the students were then trying to overcome those problems together, in a group. When there were no peers physically close to the pupil and the teachers were difficult to reach, the students were unable to achieve results by using instrumental support.

Lee et al., (2016) suggest that it would be needed to provide assistance for adolescents related to applying both problem-focused and emotion-focused strategies. They suggest that to be done by the teachers, counsellors, and the parents of the at-risk students, but could it be additionally promoted by teaching methods and applying ICT? As suggested by the results of this study, teaching methods and the use of ICT can have an impact on the coping strategy used.

6.5. RQ4: What kind of factors of resilience are coming up when discussing the adversities related to the use of ICT in school?

The third research question considered the factors of resilience that could be analysed from the interview material. Resilience has been found to promote school engagement because resilient individuals perceive themselves as more capable to cope with the adversities encountered at school (Rodríguez-Fernández et al., 2018). Moreover, higher levels of resilience decrease the risk for low academic performance (Perez-Fuentes et al., 2020). The findings of this study suggest there may be a relation between resilience and school engagement during crisis-prompted distance education. In addition, the students with observed higher levels of resilience were analysed to be able to cope with the crisis-prompted distance education better.

Personal competence could be analysed to be related to higher confidence in ICT skills. Personal competence consisted of goal orientation, realism, competence, self-confidence, and a positive outlook. The students who had higher self-assessed personal competence levels had stronger ICT skills and encountered fewer issues in distance education. Moreover, they were capable of managing the mental burdens caused the transition to distance education. This could also lead to an improved academic performance. From the personal competence, goal orientation represented the most common item discussed. Realism, competence, self-confidence, and positive outlook were also identified in many interviews. All of these items clearly related to how the girls experienced distance education and which coping strategy they used.

Moreover, other factors of resilience were also identified. Structured style consisted of aims and objectives, planfulness, and organisational skills. The findings suggest that distance education required a more structured style compared to traditional classrooms. Since distance education was found to require more self-management and self-control, the students with higher levels of structured style managed better. Having a more structured style was related, for example, to future goals and the focus to achieve them. Every so often, interviewees explained how negative experiences had led to a more structured style, as such the historical body could be seen to influence this factor. However, the students with lower levels of structured style would be able to manage the studies better if the teaching methods supported routines and the school personnel contacted the students regularly.

Another category that could indicate a more positive orientation to distance education, was family cohesion. It included six items, which were shared values, comfort, common positive outlook, support, shared activities, and common perspective. The interviews with the students revealed how the support provided by the family represented a considerable item that influenced the experiences of distance education. For example, many girls who were able to rely on the support of their parents when encountering technological problems were assessed with good or average ICT skills. Often these pupils had role models at home, who had their own intrinsic motivation towards technology. In terms of the historical body, family cohesion was discussed the most in relation to ICT skills and resilience. The support received from the pupils' parents since childhood was considered a crucial factor, which related to their ICT skills. Even now, in adolescence, it made a substantial difference. The teenagers who had higher factors in family cohesion, overcame problems and did not feel left behind that often.

The students all possessed the factors of social resources, albeit at varying levels. This category consisted of five items, which were encouragement, cohesion, support, help and appreciated by others. The importance of social resources was highlighted during distance education. In relation to academic work, the students often received help and support from their peers and teachers, and distance education impacted this the most. The help and support received from friends and school staff was needed in order to overcome the technological issues. Moreover, encouragement and cohesion promoted a community feeling and ensured that pupils were not isolated. The access to social resources decreased during distance education because physical interaction was limited. Despite the learning environment, obtaining support was often blocked by the group size and teachers did not have time to help everyone in need. Having a wide support network and enough courage to ask for help or admit to not understanding made distance education easier. When considering their historical bodies, distance education might be harder for sociable students. Those, who felt cohesion with other peers at school, missed the social environment of school the most. However, social exclusion could also be overcome by adjusting the teaching methods and increasing interaction in the virtual classroom.

The items of social competence were discussed frequently, and almost all the students discussed being socially competent. All of the students' social competence levels were reasonably strong. positive social orientation, humour, and making contact were all identified, from which positive social orientation and making contact were identified the most. Variation among the girls in those items had an impacted the coping strategy used. Those who were social discussed how they missed traditional classrooms even more. The breaks between classes at school encouraged mental health. The girls who were surrounded by more people managed challenges better and received more help. The finding of high social competence levels among girls supports previous studies (Hjemdal et al., 2006).

The analysis of the results proposes the current education in Finland does not consider the students' diverse backgrounds in ICT enough. Therefore, it could promote inequality by leaving those, who have less support from family, in a disadvantageous situation. The ICT skill levels should be measured as any skills taught at school. Both teachers and students should be educated in order to make the best out of the use of ICT. Moreover, ICT could support the individual variability by, for example, promoting resilience and encouraging to use of more problem-focused coping so that everyone can reach their full potential.

7. Conclusions

In recent years, upper secondary education in Finland has undergone a plethora of changes. Reforming the General Upper Secondary Schools Act (2017), digitalisation and a switch to distance learning have increased the use of ICT in schools. Despite the general assumption that young people are digitally skilled, there is also a known digital divide, which at worst, will create a digital inequality. The coronavirus pandemic required a rapid response by global governments. As such, upper secondary education, which is daunting enough, was directly impacted by restrictions, lockdowns, and societal confusion. Secondary education was shifted from traditional classrooms to virtual settings, which increased the use of ICT even more.

Resilience has a well-established positive association with academic performance, and especially when facing adversities. Therefore, exploring the students' experiences during the coronavirus pandemic through the lens of resilience was chosen. This thesis aimed to explore the use of ICT in upper secondary education. Moreover, students' experiences related to the use of ICT during the COVID-19 pandemic were discussed. To understand how the students reacted to adversity, resilience and coping strategies were analysed.

Based on the qualitative analysis, the teenage girls who studied in upper secondary schools in Finland, adapted well to distance learning. However, they were affected by their historical bodies. Factors such as family and educational backgrounds significantly impacted student experienced confidence and their ability to manage problems. Those students, who were more confident with ICT faced fewer problems in distance education, which was carried out completely virtually.

Regarding the use of ICT, there was not much difference in the applications used. However, teaching methods differed. Distance education provided alternative ways of learning, and the applications could be used in both motivating and discouraging ways. While teaching methods that suited some, were not suitable for everyone. Some teaching strategies were found to be generally discouraging, such as teacher-led lecturing where there was minimal interaction between the students. Student interactions in distance classes varied from the traditional classroom setting and meant that students had to adapt additional roles.

The students interviewed discussed the challenges of distance education related to learning, teaching, communication, technology, environment, wellbeing, and examinations. Based on the analysis, many of problems discussed could have been overcome by adjusting the teaching methods and increasing the interaction among the students and the teachers.

All the students who were analysed possessed many factors of resilience, although at different levels. The more confident students encountered fewer issues that were impossible to overcome. Additionally, they were analysed to possess higher levels of resilience, for example, in personal competence and family coherence. Moreover, social resources, and the decreased access to them during distance education were discussed frequently.

As with resilience, the use of coping strategies also varied among the students. The most common coping strategy employed were problem-focused strategies. The students who were more confident with ICT were analysed to use dysfunctional strategies less often. Furthermore, social resources had a significant impact on whether a pupil used problem-

focused strategies or dysfunctional coping strategy. Additionally, distance education was analysed to have an effect on which coping strategy was used. That was affected by, for example, the altered interaction. However, also, this decision varied between the students and as such distance education could either promote using problem-focused or dysfunctional strategies.

This study provided a superficial picture of the coronavirus phenomena and the crisis-prompted switch to distance education in Finland. In order to generalise the results, this study would need to explore the factors of resilience and coping by asking the students themselves to fill in questionnaires. Moreover, the sample size of students is quite narrow and not randomised, which makes the results descriptive, giving voice to those interviewed individuals only.

For future research, it would be important to find out, whether the pandemic had any long-term effects on the adolescents' wellbeing and learning. Moreover, a quantitative study exploring more of those factors of resilience and coping could be conducted in order to get more generalisable results.

References

Arantzazu Rodríguez-Fernández, Estibaliz Ramos-Díaz, Inge Axpe-Saez. (2018). The role of resilience and psychological well-being in school engagement and perceived academic performance. Health and academic achievement () IntechOpen. Retrieved from https://www.intechopen.com/books/health-and-academic-achievement/the-role-of-resilience-and-psychological-well-being-in-school-engagement-and-perceived-academic-perf

Bergdahl, N., & Nouri, J. (2020). Covid-19 and crisis-promted distance education in sweden. Technology, Knowledge and Learning, , 1-17. doi:10.1007/s10758-020-09470-6

Bergdahl, N., Nouri, J., Fors, U., & Knutsson, O. (2020). Engagement, disengagement and performance when learning with technologies in upper secondary school. Computers & Education, 149, 103783. doi:10.1016/j.compedu.2019.103783

Blomgren, A., Svahn, K., Åström, E., & Rönnlund, M. (2016). Coping strategies in late adolescence: Relationships to parental attachment and time perspective. The Journal of Genetic Psychology, 177(3), 85-96. doi:10.1080/00221325.2016.1178101

Bolli, T., & Hof, S. (2018). The impact of work-based education on non-cognitive skills. Journal of Research in Personality, 75, 46-58. doi:10.1016/j.jrp.2018.05.005

Brändström, S., Wiklund, C., & Lundström, E. (2012). Developing distance music education in arctic scandinavia: Electric guitar teaching and master classes. Music Education Research, 14(4), 448-456. doi:10.1080/14613808.2012.703173

Carver, C. S. (1997). You want to measure coping but your protocol' too long: Consider the brief cope. International Journal of Behavioral Medicine, 4(1), 92-100. doi:10.1207/s15327558ijbm0401_6

CARVER, C. S., & CONNOR-SMITH, J. (2010). Personality and coping. Annual Review of Psychology, 61(1), 679-704. doi:10.1146/annurev.psych.093008.100352

City of Oulu, Educational and Cultural Services. (2018, February). Digitaalisuus Oulun kaupungin perusopetuksessa - Digiloikka 2020 -projektitiimin selvitysraportti. Oulun kaupunki. https://www.ouka.fi/documents/64277/104162/Digiloikka2020_selvitysraporttii.pdf/c5b87f1a-e5b7-4f4e-ad7d-f8c5955298db

Creswell, J. W., & Poth, C. N. (2016). Qualitative inquiry and research design: Choosing among five approaches. Sage publications.

Dray, J., Bowman, J., Campbell, E., Freund, M., Wolfenden, L., Hodder, R. K., . . . Wiggers, J. (2017). Systematic review of universal resilience-focused interventions targeting child and adolescent mental health in the school setting. Journal of the American Academy of Child & Adolescent Psychiatry, 56(10), 813-824. doi:10.1016/j.jaac.2017.07.780

Eskonen Hanna, de Fresnes Tulikukka, & Pietarinen Eetu. (2020). Peruskoulun pitäisi taata samat lähtökohdat köyhien ja varakkaiden lapsille, mutta repikö korona tasa-arvon kappaleiksi? Retrieved 17.06.2020 from https://yle.fi/uutiset/3-11394459

Finnish National Agency for Education (Opetushallitus). (2019). Lukion opetussuunnitelman perusteet 2019

Fiorilli, C., Farina, E., Buonomo, I., Costa, S., Romano, L., Larcan, R., & Petrides, K. V. (2020). Trait emotional intelligence and school burnout: The mediating role of resilience and academic anxiety in high school. International Journal of Environmental Research and Public Health, 17(9), 3058. doi:10.3390/ijerph17093058

Fletcher, D., & Sarkar, M. (2013). Psychological resilience. European Psychologist, 18(1), 12-23. doi:10.1027/1016-9040/a000124

Friborg, O., Hjemdal, O., Rosenvinge, J. H., & Martinussen, M. (2003). A new rating scale for adult resilience: What are the central protective resources behind healthy adjustment? International Journal of Methods in Psychiatric Research, 12(2), 65-76. doi:10.1002/mpr.143

Hartberg, S., Clench-Aas, J., Raanaas, R. K., & Lundqvist, C. (2015). Coping strategies among adolescents with chronic headache and mental health problems: A cross-sectional population-based study. SpringerPlus, 4(1), 801. doi:10.1186/s40064-015-1599-x

Hirsjärvi, S., & Hurme, H. (2008). Tutkimushaastattelu: Teemahaastattelun teoria ja käytäntö. Helsinki: Gaudeamus. Retrieved from https://oula.finna.fi/Record/oula.1452882

Hjemdal, O., Aune, T., Reinfjell, T., Stiles, T. C., & Friborg, O. (2007). Resilience as a predictor of depressive symptoms: A correlational study with young adolescents. Clinical Child Psychology and Psychiatry, 12(1), 91-104. doi:10.1177/1359104507071062

Hjemdal, O., Friborg, O., Stiles, T. C., Martinussen, M., & Rosenvinge, J. H. (2006). A new scale for adolescent resilience: Grasping the central protective resources behind healthy development. Measurement and Evaluation in Counseling and Development, 39(2), 84-96. doi:10.1080/07481756.2006.11909791

Hyrynsalmi, S., & Hyrynsalmi, S. (2019, June). What motivates adult age women to make a career change to the software industry?. In 2019 IEEE International Conference on Engineering, Technology and Innovation (ICE/ITMC) (pp. 1-8). IEEE.

Iivari, N., Sharma, S., & Ventä-Olkkonen, L. (2020). Digital transformation of everyday life – how COVID-19 pandemic transformed the basic education of the young generation and why information management research should care? International Journal of Information Management, 55, 102183. doi:10.1016/j.ijinfomgt.2020.102183

Juvonen, R., Tanner, M., Olin-Scheller, C., Tainio, L., & Slotte, A. (2019). 'Being stuck'. analyzing text-planning activities in digitally rich upper secondary school classrooms. Learning, Culture and Social Interaction, 21, 196-213. doi:10.1016/j.lcsi.2019.03.006

Kaarakainen, Meri-Tuulia. (2019). ICT intentions and digital abilities of future labor market entrants in finland 1. Nordic Journal of Working Life Studies, 9(2), 105-126. Retrieved from https://search.proquest.com/docview/2247501557

Kaarakainen, Meri-Tuulia & Antero, Kivinen & Kaarakainen, Suvi-Sadetta. (2017). Differences between the genders in ICT skills for Finnish upper comprehensive school students: Does gender matter?. Seminar.net. 13. 1-16.

Kelly, Y., Fitzgerald, A., & Dooley, B. (2017). Validation of the Resilience Scale for Adolescents (READ) in Ireland: a multi-group analysis. International journal of methods in psychiatric research, 26(2), e1506.

Kinnula, M., & Iivari, N. (May 28, 2019). Empowered to make a change. Paper presented at the 1-8. doi:10.1145/3335055.3335071 Retrieved from http://dl.acm.org/citation.cfm?id=3335071

Koivusilta, L., Lintonen, T., & Rimpela, A. (2007). Orientations in adolescent use of information and communication technology: A digital divide by sociodemographic background, educational career, and health. Scandinavian Journal of Public Health, 35(1), 95-103. doi:10.1080/14034940600868721

Lee, J. H., Seo, M., Lee, M. H., Park, S. Y., Lee, J. H., & Lee, S. M. (2016). Profiles of coping strategies in resilient adolescents SAGE Publications. doi:10.1177/0033294116677947

McHugh, B., Wisniewski, P., Rosson, M., Xu, H., & Carroll, J. (2017). Most teens bounce back. Proceedings of the ACM on Human-Computer Interaction, 1(CSCW), 1-19. doi:10.1145/3134711

National Institute for Health and Welfare. (2019). Kouluterveyskyselyn aikasarjat 2006-2019 . (2019). Retrieved from https://sampo.thl.fi/pivot/prod/fi/ktk/ktk1/fact_ktk_ktk1

Niemi, H. M., & Kousa, P. (2020). A case study of students' and teachers' perceptions in a finnish high school during the COVID pandemic. International Journal of Technology in Education and Science, 4(4), 352-369. doi:10.46328/ijtes.v4i4.167

Olofsson, A., Lindberg, O., & Fransson, G. (2017, July). State of the art technology? Mapping students' talk about information and communication technology in upper secondary schools. In The International Conference on Information Communication Technologies in Education (ICICTE 2017) Proceedings Southampton Solent University, United Kingdom.

Pagani, L., Argentin, G., Gui, M., & Stanca, L. (2016). The impact of digital skills on educational outcomes: Evidence from performance tests. Educational Studies, 42(2), 137-162. doi:10.1080/03055698.2016.1148588

Pavarini, G., Lyreskog, D., Manku, K., Musesengwa, R., & Singh, I. (2020). Debate: Promoting capabilities for young people's agency in the COVID-19 outbreak. Child and Adolescent Mental Health, 25(3), 187-188. doi:10.1111/camh.12409

Pérez-Fuentes, M. d. C., Molero Jurado, María del Mar, Barragán Martín, A. B., Mercader Rubio, I., & Gázquez Linares, J. J. (2020). Validation of the resilience scale for

adolescents in high school in a spanish population. Sustainability (Basel, Switzerland), 12(7), 2943. doi:10.3390/su12072943

Rice, V., & Liu, B. (2016). Personal resilience and coping with implications for work. part I: A review. Work, 54, 325-333. doi:10.3233/WOR-162300

Rodríguez-de-Dios, I., van Oosten, J. M. F., & Igartua, J. (2018). A study of the relationship between parental mediation and adolescents' digital skills, online risks and online opportunities. Computers in Human Behavior, 82, 186-198. doi:10.1016/j.chb.2018.01.012

Scheerder, A., van Deursen, A., & van Dijk, J. (2017). Determinants of internet skills, uses and outcomes. A systematic review of the second- and third-level digital divide. Telematics and Informatics, 34(8), 1607-1624. doi:10.1016/j.tele.2017.07.007

Schreier, M. (2013). The SAGE handbook of qualitative data analysis SAGE Publications Ltd. doi:10.4135/9781446282243

Scollon, R. & Scollon, S.W. (2004). Nexus Analysis: Discourse and the Emerging Internet. 1-198. 10.4324/9780203694343.

Semaan, B. (2019). 'Routine infrastructuring' as 'building everyday resilience with technology'. Proceedings of the ACM on Human-Computer Interaction, 3(CSCW), 1-24. doi:10.1145/3359175

Shapka, J. D., Domene, J. F., Khan, S., & Yang, L. M. (2016). Online versus in-person interviews with adolescents: An exploration of data equivalence. Computers in human behavior, 58, 361-367.

Siddiq, F., Hatlevik, O. E., Olsen, R. V., Throndsen, I., & Scherer, R. (2016). Taking a future perspective by learning from the past – A systematic review of assessment instruments that aim to measure primary and secondary school students' ICT literacy. Educational Research Review, 19, 58-84. doi:10.1016/j.edurev.2016.05.002

Siddiq, F., & Scherer, R. (2019). Is there a gender gap? A meta-analysis of the gender differences in students' ICT literacy. Educational Research Review, 27, 205-217. doi:10.1016/j.edurev.2019.03.007

Statistics Finland. (2020). Suomen virallinen tilasto (SVT): Lukiokoulutus [verkkojulkaisu]. (2020). Helsinki: Tilastokeskus [viitattu: 4.1.2021]. Retrieved from http://www.stat.fi/til/lop/index.html

Steinhardt, M., & Dolbier, C. (2008). Evaluation of a resilience intervention to enhance coping strategies and protective factors and decrease symptomatology. Journal of American College Health, 56(4), 445-453. doi:10.3200/JACH.56.44.445-454

Tu, K. M., Cai, T., & Li, X. (2020). Adolescent coping with academic challenges: The role of parental socialization of coping. Journal of Adolescence (London, England.), 81, 27-38. doi:10.1016/j.adolescence.2020.03.008

Turner, P. (2011, August). Everyday coping: the appropriation of technology. In Proceedings of the 29th Annual European Conference on Cognitive Ergonomics (pp. 127-133).

Twum-Antwi, A., Jefferies, P., & Ungar, M. (2020). Promoting child and youth resilience by strengthening home and school environments: A literature review. International Journal of School & Educational Psychology: Parents, Caregivers and Educators: The Forgotten Stakeholders in the Discussion of Resilience, 8(2), 78-89. doi:10.1080/21683603.2019.1660284

van Laar, E., van Deursen, A. J. A. M., van Dijk, J. A. G. M., & de Haan, J. (2017). The relation between 21st-century skills and digital skills: A systematic literature review. Computers in Human Behavior, 72, 577-588. doi:10.1016/j.chb.2017.03.010

von Soest, T., Mossige, S., Stefansen, K., & Hjemdal, O. (2010). A validation study of the resilience scale for adolescents (READ). Journal of Psychopathology and Behavioral Assessment, 32(2), 215-225. doi:10.1007/s10862-009-9149-x

Vuorio, J., Okkonen, J., & Viteli, J. (Oct 10, 2018). Finnish upper secondary students user expectations and experiences using MALL system. Paper presented at the 236-243. doi:10.1145/3275116.3275150 Retrieved from http://dl.acm.org/citation.cfm?id=3275150

Weber, M., & Becker, B. (2019). Browsing the web for school: Social inequality in adolescents' school-related use of the internet. SAGE Open, 9(2), 215824401985995. doi:10.1177/2158244019859955

Wisniewski, P., Jia, H., Wang, N., Zheng, S., Xu, H., Rosson, M. B., & Carroll, J. (Apr 18, 2015). Resilience mitigates the negative effects of adolescent internet addiction and online risk exposure. Paper presented at the 4029-4038. doi:10.1145/2702123.2702240 Retrieved from http://dl.acm.org/citation.cfm?id=2702240

Appendix 1. Interview themes and questions

TEEMA	PÄÄKYSYMYS, KYSYTÄÄN KAIKILTA	LISÄKYSYMYKSET/TARKENNUS, JOS TARVITSEE
ALUKSI		
	Kerrotko jotain itsestäsi?	Missä opiskelet, miten olet suuntautunut opinnoissasi, ikä, paikkakunta
	Miten kuvailisit itseäsi?	Luonteenpiirteitä, millainen olet omasta mielestäsi, miten kaverit/perhe kuvailevat sinua, missä olet hyvä, missä haluaisit kehittyä
IT-TAIDOT		
	Millaiset IT-taidot sinulla on, miten koet osaavasi käyttää teknologiaa yleisesti ottaen?	Missä tilanteissa on ongelmia? Mikä tuntuu helpolta? Millainen käsitys taidoista verrattuna muihin saman ikäisiin?
	Mikä tai ketkä ovat vaikuttaneet siihen, miten koet IT-taitosi? Onko aina ollut näin?	Käyttääkö kaverit/perheenjäsenet minkä verran, onko itsellä harrastuksia, joissa käytetään? Kokeeko, että näillä tekijöillä on vaikutusta?
TEKNOLOGIA LUKIO-OPETUKSESSA, ETÄOPETUS JA KORONA		
	Miten teidän lukiossanne käytetään teknologiaa opetuksessa?	Ohjelmistot, kommunikaatio, tiedonhaku, muuta?
	Kuinka tottunut olit ennen lukio-opintoja teknologian käyttöön opiskeluun liittyen?	Kokeeko että sai peruskoulusta tarpeeksi taitoja lukio-opinnoista suoriutumiseen? Tai saiko tarpeeksi perehdytystä ohjelmistojen käyttöön lukio-opintojen alussa?
	Entä miltä nyt on tuntunut, kun korona aikana on ollut paljon etäopiskelua ja teknologian käyttöä on lisätty?	
	Vaikuttavatko aikaisemmat IT-taitosi siihen, miten opiskelu on nyt korona-aikana sujunut?	
	Miten opettajat ovat onnistuneet, onko teknologiaa käytetty järkevästi kursseilla?	
	Onko kurssien välillä ollut eroja?	
	Mitkä asiat ovat olleet haastavampia, missä on ollut ongelmia?	Onko jonkun tehtävän tekeminen vienyt joskus paljon enemmän aikaa, koska teknologian käytön opettelu on vienyt aikaa? Tai vaikuttanut motivaatioon?
SELVIYTYMISMEKANISMIT		
	Mikä on auttanut selviämään näistä haasteista?	Tai miksi luulee, että haasteita ei ole ollut? Tukiverkko, tietyt tavat toimia, aikaisemmat kokemukset? Saako apua perheeltä, kavereilta, opettajalta, internetistä?
	Mikä on sitten ollut helppoa?	
	Mikä sinun mielestäsi edesauttaa siihen, että pärjää teknologian kanssa opinnoissa? Millaisia tietoja ja taitoja olisit tarvinnut lisää?	
	Millaisia vinkkejä antaisit niille, jotka aloittavat nyt syksyllä lukion?	

Jos koronatilanne jatkuu, millaisia ongelmia näet siinä opetukseen liittyen? Entä hyviä puolia? Onko sillä vaikutusta lukio-opinnoissa pärjäämisen kanssa?	Tuntuuko se kuormittavan enemmän, vai helpottavan? Vaikuttaako opinnoista suoriutumiseen, tai aiheuttaako lisästressiä?